150

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Air King	17K1C (Ch. 700.110, 700.130) Tel. Rec.	150-2
Airline	05BR-3021B, 05BR-3024B, 05BR-3027A Tel. Rec.	150-3
Bell Sound	420	150-4
Capehart	1007AM (Ch. C-318)	150-5
Chevrolet	986516	150-6
Hoffman	630, 631, 632, 633, 634, A, 635, A, 866, A, 867, A, 868, A, 870, 871, 872, 876, A, 877, A, 878, A, 890, 891, 892 (Ch. 170, 171, 173, 175) Tel. Rec.	150-7
Mantola	92-529	150-8
Masco	MSD-16	150-9
Oldsmobile	982699, 982700	150-10
Scott (E. H.)	Ravenswood, 710, 710A, 710X, 910 Tel. Rec.	150-11
Stromberg-Carlson	1608	150-12
Trav-ler	62R50, 63R50, 114-1A, 114-2, 117-3, 117-4, 119-5 (Ch. 32A1) Tel. Rec.	150-13
Westinghouse	H640T17, H641K17 (Ch. V-2192, -1, -2, -3, -4, -5, -6) H658T17 (V-2192, -1), H663T17 (Ch. V-2192, -2), Tel. Rec. Prod. Chge. Bul. 28	150-1

The PHOTOFACT Servicer

November 1, 1951 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. No. 15, Nos. 149 & 150

"Make promises sparingly and keep them faithfully, no matter what it costs you."

BOOK REVIEW

ANTENNAS
by
John K. Kraus, Ph. D.

McGraw-Hill Book Co., Inc.
New York 10, New York. Price $8.00

This book presents the basic theory of antennas with emphasis on their engineering applications. The principles included are basic and are applied to antennas for all frequencies.

The first four chapters deal with the fundamental theories of point sources and with the antenna as an aperture. These are followed by three chapters on linear, loop and helical antennas. The theories of the biconical antenna and the cylindrical antenna are next discussed. The self and mutual impedance of antennas and the theory of arrays of linear antennas are discussed in the next chapters. These are followed by chapters on reflector-type antennas, slot, horn, complementary, lens, long wire antennas and many other types. The final chapter describes methods and techniques of antenna measurements and includes a discussion of wave polarization. An appendix which contains a number of useful reference tables is also included in the book.

While the material is presented particularly for engineering study at the senior or graduate level it will be of interest to service technicians and experimenters who are especially interested in practical antenna design.

* * *

TRADE ITEMS

New Product Listing -

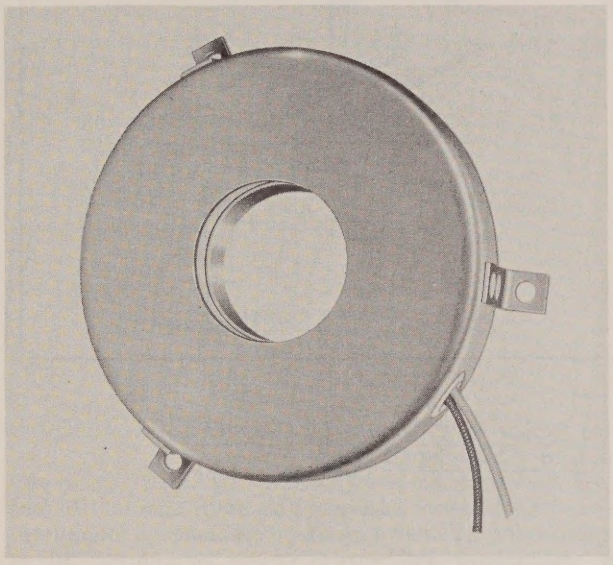
Merit Transformer Corporation has just announced a complete line of RF and IF coils to be added to their jobber line. The line covers TV, AM, and FM applications and includes not only RF and IF coils but also a complete line of RF chokes for service and industrial application. Forthcoming issues of PHOTOFACT Folders will carry a listing of the replacement items in the parts list. Watch for the appearance of this data and for the stock of Merit replacement coils at your distributor.

* * *

Standard Transformer
Announces Three New Items

Stancor has just made available to the service trade three popular replacement units:

Catalog No. FC-11 Focus Coil, for use with direct view picture tubes requiring external magnetic focusing. This unit has a DC resistance of 470 ohms and a maximum current rating of 140 milliamperes. The diameter is 4-3/4 inches with mounting centers of 2-11/16 inch radius, 120° apart. The accompanying picture illustrates this product.



Catalog No. A-8124 Vertical Blocking Oscillator Transformer is a three-winding transformer for replacement in early model DuMont, Stromberg-Carlson and Crosley receivers.

Catalog No. P8163 Power Transformer, which is an exact replacement for RCA Part No. 75508, used in the 16-inch, 17-inch and 19-inch RCA 1951 chassis which was widely sold. All of these units are now available from your distributor.

* * *

Hytron Adds Pickup Stick to
Series of Service Tools

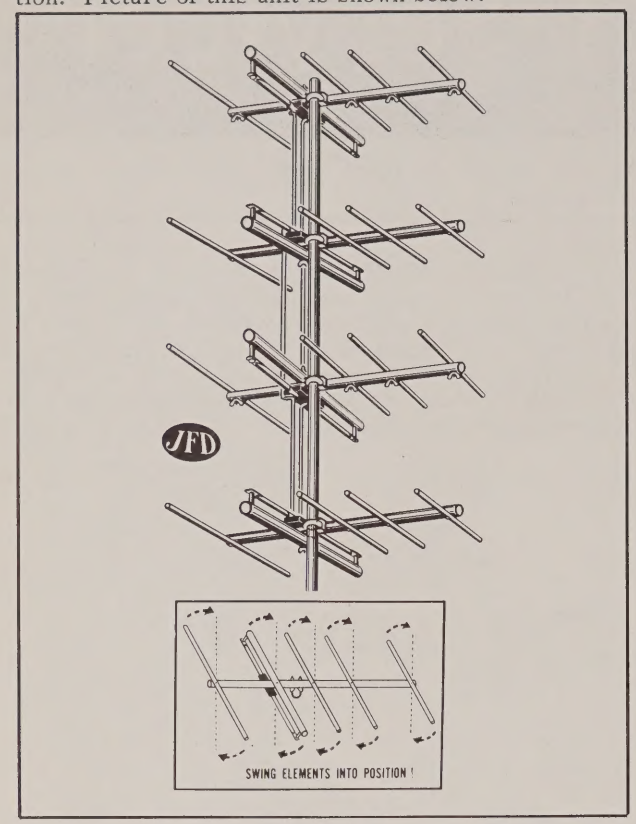
A special wax tip on the end of a lead pencil becomes a useful tool when picking up screws, nuts and washers which have been dropped into an inaccessible spot in a radio or television chassis. It also is helpful when a third hand is needed to start a nut or screw. This item is available at your local Hytron distributor.

* * *

New Yagi Array

JFD has just introduced a double stacked 4 and 5 element Yagi array for Channel 7-13. A matching

system is used to provide a match to 300 ohm line and gain is said to be 20 Db over a tuned dipole. The design is of the "Quik-Rig" type and speeds installation. Picture of this unit is shown below.



* * *

RCA Builds First Mobile TV Caravan for U. S. Army Signal Corps

Caravan consists of four special 10-ton trucks, each 31-feet long, and includes a complete TV transmitter and monitoring equipment, three field cameras, ten receivers, a large screen TV projector, a radio intercom system and a complete power supply generator. According to the Signal Corps the caravan will be used to explore the feasibility of television for field instruction and to develop instructional techniques via TV.

It is contemplated that the equipment will have much value in televising intricate field exercises and "piping" the picture to expert observers, maneuver umpires or to classrooms.

The system will not be used directly for television broadcasts according to the Signal Corps, since programs picked up in the field will be sent either by microwave radio link or coaxial cable to military classrooms or to a broadcast station. Undoubtedly, this type of unit, if successful, will aid materially in the Army Training Program and it is logical to assume that the same techniques will eventually be applied at the civilian classroom level.

* * *

TACO Announces New 5-Element Twin-Driven Yagi

The new unit, known as the Super 980, may be tuned for any of the low channels and features a gain greater than the popular 4-element twin-driven design. The antenna consists of three parasitic elements, two directors, one reflector and two driven elements. The driven elements are folded-dipoles connected in parallel with a terminal impedance to match a 300-ohm line. The antenna comes completely factory assembled and is available as a single bay or a stacked array.

* * *

FIELD EXPERIENCES

For every "Field Experience" published, we issue a certificate good for one PHOTOFACT Folder Set. Awards are issued at the time of publication. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

FORD Model 6MF780 (51A-1805-A1)
Photofact Set No. 62, Folder No. 12

Complaint: Second IF Transformer has 5 leads, one of which is black ground lead. This wire is soldered to chassis but either corrodes or vibrates loose inside of insulation next to chassis.

Remedy: Resolder to ground terminal on 7A7 socket.

Lester G. Basham
Basham Radio Service
8/10th Mile East on Caves Highway
Cave Junction, Oregon

* * *

EMERSON Models 650D, 654D, 655D
(Ch. 120123-B)
Photofact Set No. 109, Folder No. 3

Complaint: No control of horizontal after warm-up with severe tearing of raster.

Cause and Remedy: Capacitor C84 shunting the horizontal phase coil causes a frequency change when warm. A routine check of the capacitor will not show this defect but replacement with one of the recommended units solved the trouble.

EMERSON Models 650D, 654D, 655D
(Ch. 120123-B)
Photofact Set No. 109, Folder No. 3

Complaint: Horizontal drift during warm-up.

Cause and Remedy: Capacitor C79 had high resistance leak. Replace with recommended item.

Editor's Note: Both above Experiences were contributed by -

Milton McGrath
Radio & Television Service
Gallupville, N. Y.

* * *

The following general service hint has been received and applies equally well to all receivers.

Complaint: Arcing at high voltage terminal of glass picture tube.

Cause: Accumulation of dust and dirt on the insulated portion of the glass envelope. Moisture will collect at this point and cause a severe arcing from the high voltage lead to the outside coating of the tube. I have found that this arcing will follow the glass for at least an inch. The last trouble like this stumped me for three days until I found the right answer. I tried painting the high voltage plug and the glass with corona dope but the arcing continued right through and under. I tried cleaning the glass with carbon tetrachloride, but this didn't seem to help either. I finally got around to using gasoline, giving it a good chance to evaporate. This time no arcing!

Moore Radio Service
5929 Troost Street
Kansas City, Missouri

* * *

HALLICRAFTERS Model 810C
Photofact Set No. 136, Folder No. 9

Complaint: No sound or picture.

Cause and Remedy: Surge resistor overheats and burns out. 80 mfd. input electrolytic is defective. Replace with unit of higher voltage

Mr. Max Kellman
306 Garfield Place
Brooklyn 15, N. Y.

* * *

BENDIX Model 3001-U
Photofact Set No. 84, Folder No. 4

Complaint: Loss of horizontal sync.

Cause and Remedy: Resistor R68 may be made up of three items and a change in value will cause the synchronization to fail. Replace with proper value.

PHILCO Model 48-1001
Photofact Set No. 53, Folder No. 17

Complaint: No raster.

Cause and Remedy: Defective capacitor, Item C57. Replace with one of the recommended type.

Editor's Note: Both above Experiences were contributed by -

James Moudry
5405 W. 23rd Place
Cicero 50, Illinois

* * *

BENDIX Model 2025
Photofact Set No. 99, Folder No. 5

Complaint: Not enough width.

Cause and Remedy: Capacitor C38 leaky causing resistor R56 and the damper tube circuit to overload. Replace with recommended unit.

DUMONT Model RA103D
Photofact Set No. 93, Folder No. 4

Symptom: Sound blanked out by high-pitched motor boating.

Cause and Remedy: DuMont reports in their service hints that this can be caused by leaking 6SN7 vertical amplifiers. In this case, however, changing the tubes did not eliminate the trouble. The vertical oscillator transformer, Item T-2, was breaking down between the two secondaries. Replace with factory supplied unit which is also available from other manufacturers who use this vertical oscillator circuit.

Editor's Note: The receivers of this series use a three-winding transformer and couple the sync pulse through one winding. While it is possible to rearrange the circuit with a standard vertical blocking transformer and integrator network, this is recommended only if the original part cannot be obtained.

Editor's Note: Both above Experiences were contributed by -

Horace Descartes Westbrooks
Radio Technician
117 West Solomon Street
P. O. Box 281
Griffin, Georgia

* * *

EMERSON Model 660B, 664B, 673B
(Ch. 120133B)
Photofact Set No. 131, Folder No. 6

Complaint: No raster.

Cause and Remedy: High voltage measurement okay with all other voltages except the cathode voltage on the 12LP4 within 10%. Capacitor C49 was leaky and replacement with recommended unit repaired the receiver.

John DeFrees
Triangle Appliance Service
Durhamville, R. D. No. 1
State Bridge, N. Y.

* * *

SILVERTONE Model 7090 (Ch. 101-810)
Photofact Set No. 15, Folder No. 32

In several instances, I have noted that this radio is an offender with a violent hum, a hum that is not present when the set first turns on. Hum gradually builds up to the point where it modulates the signals to great distortion and when the set is tuned to a no-signal spot on the dial, manifests itself as a loud, violent hum. This hum fooled me as I thought of it (by its sound) only as hum and checked the coupling, audio condenser, the filters for leakage, leakage between ganged filters, cathode bypass condenser and resistor, etc.

I find that the cause of this trouble is in the wiper blade of the volume control (center tap) being anchored to a blank contact pin of the 50A5 output tube and thence by coupling capacitor to the 7C6. The lead to the blank pin of the 50A5 runs between the

filter, 50A5 and near the 35Y4 sockets. The AC line, the filter plate lines, the audio coupling capacitor are all ganged along this line and the hum is a buildup onto 7C6 grid. While this seems an elementary lead-dress problem, I'd like to bring forth the fact that this is such a critical position of leads that recurence will ensue unless drastic steps are taken, this due to vibration and moving of the lead dress. I have found that a piece of shielded wire in this lead, with shield grounded, will do the job once and for all.

I pass this hint on for whomever can use it, as I looked at the thing as hum rather than a combination of distortion, hum and AC modulation. I spent several weary, fruitless hours on this.

Thomas E. Hardy
Hardy Radio Service
Hardy, Arkansas

* * *

DELCO Model TV-102
Photofact Set No. 88, Folder No. 3

Complaint: Intermittent picture.

Remedy: Ground side of picture tube filament is connected to bracket under 12AU7 tube. Rivet was loose. Ground bracket to 12AU7 socket.

James J. Walters
Walters Radio Repair
Box 251
Smithton, Pennsylvania

* * *

RCA Model 9T57
Photofact Set No. 122, Folder No. 8

Complaint: Both vertical and horizontal sync unstable. Lack of contrast in picture.

Analysis and Repair: Evidence of B+ voltage on picture tube grid (terminal No. 2). Check of the capacitor (Item C63) indicated a dead short. Replacement of the unit with one of the recommendations in PHOTOFACT Folders repaired the receiver.

Comment: This failure has been detected in several chassis of this same type.

Les Deane
337 N. Bradley Street
Indianapolis, Indiana

* * *

ARTONE Model 112A

Complaint: Picture running vertically which couldn't be controlled by vertical hold control.

Cause: .055 vertical oscillator grid capacitor was defective. Replacement of the unit effected the repair but it was necessary to replace the 6SN7 to restore proper height and linearity.

Joseph Sharp
4446 N. Third Street
Philadelphia 40, Pennsylvania

RAYTHEON Model M1105-B
Photofact Set No. 141, Folder No. 11

Complaint: No control of vertical hold.

Cause: Item R78 cracked in two.

Remedy: Replace with the recommended unit listed in PHOTOFACT Folders.

FADA Model S4T30
Photofact Set No. 142, Folder No. 8

Complaint: Sound and picture intermittent for a time then off completely.

Cause: Resistor R27 burned in two. A check revealed no short in the wiring. The 6CB6, third video IF, showed a suppressor-to-plate short.

Remedy: Replace with an IRC 100 ohm 1/2 watt resistor (BTS-100) and a Sylvania 6CB6.

CROSLEY Model 9-407
Photofact Set No. 66, Folder No. 6

Complaint: Blows fuses.

Cause: One of the 5U4 low voltage rectifiers (tube V-26) was defective. After replacing tube I could not get a picture due to the chattering of the rectifier delay relay, Item M4. This condition was caused by an open capacitor (Item C6).

Remedy: Replace with one of the recommended units.

Editor's Note: All three above Experiences were contributed by:

J. W. Smith
The Radio Shack
1602 West Pratt Street
Baltimore, Maryland

* * *

MAJESTIC Model 17DA, GA, HA
Photofact Set No. 127, Folder No. 7

Complaint: Vertical fails to hold and I have found several sets in which R65 has increased in value from 1.5 megohms to 2 megohms.

Remedy: A 1 megohm resistor seems to work better than the original 1.5 megohm.

J. Jackson
Auburn Radio Company
516 Pontiac
Cranston 10, R. I.

* * *

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 15 IN SET 133.

Models H-640T17, H-641K17, Chassis V-2192, V-2192-1 V-2192-2 V-2192-3

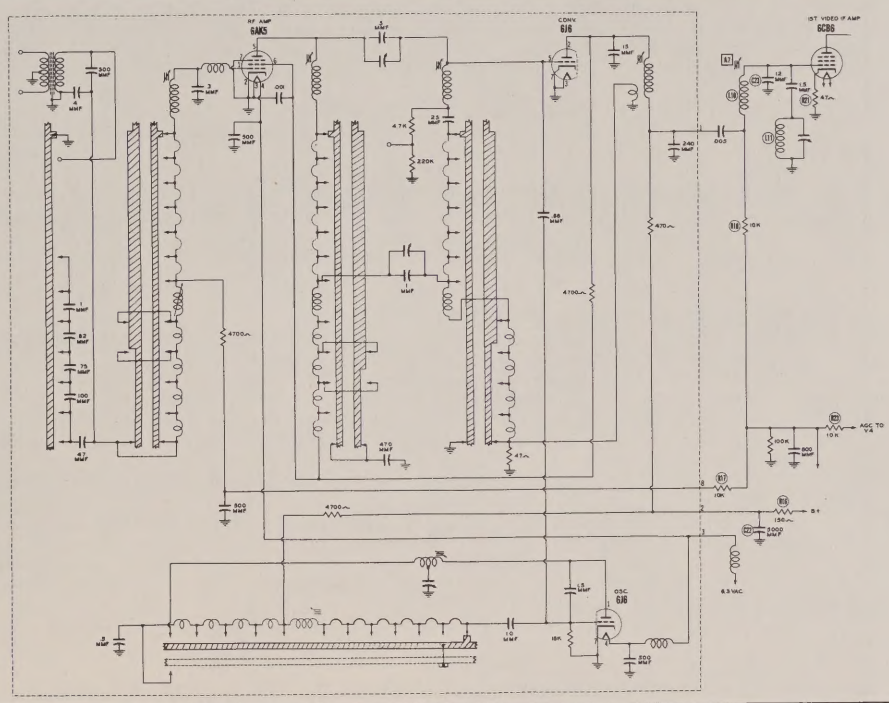
Later production Models H-640T17 and H-641T17 use chassis V-2192, -1, -2, -3 interchangeably. The differences between the chassis is in the tuners.

Chassis V-2192 uses either a V-9886-5 or a V-9886-6 tuner assembly.

Chassis V-2192-1 uses a V-10279-1 tuner. A schematic for this tuner is shown on page 7 of Folder 15 in Set 133. A series tuned trap was added across the 180Ω resistor in the antenna input circuit. The location of the trimmer is on top of the tuner near the back edge. Its purpose is to eliminate beat interference when a strong signal on channel six is received. The trimmer is normally closed but when channel six interference appears it is adjusted to eliminate it. A second trap in later productions is added to reduce interference resulting from the FM band. This trap is connected in exactly the same manner as the previously described trap and is located near it. The FM trap is adjusted to the frequency of the interfering signal. The two traps can be identified since the channel six trap has more turns than the FM trap. When the channel six trap is used in the tuner the AGC circuit is changed. The junction of R18, R19 and R23 are removed from the video test terminal strip and a 47KΩ resistor is connected between the terminal strip and the junction.

Chassis V-2192-2 uses a V-10279-2 tuner. This tuner is the same as V-10279-1 except that a 100Ω RF amplifier cathode resistor is used and the 12KΩ resistor from the grid of the mixer to the test point is changed to 220KΩ. This tuner does not contain a channel six trap circuit. Later production V-10279-2 tuners use an FM trap connected identically as the FM trap for the V-10279-1 tuner used in chassis V-2191-1. When the V-10279-2 does not contain the FM trap the AGC circuit is modified as described for V-2192-1 chassis.

Chassis V-2192-3 uses a V-10500-1 tuner assembly. A schematic for this tuner is shown below. Alignment corresponds to that given in Folder 15 in Set 133 except that a detuning clip is not used.



WESTINGHOUSE MODELS H-640T17, H-641K17 (Ch. V-2192, V-2192-1, -2, -3, -4, -5, -6), H-655K17, H-657K17(Ch. V-2192-4, -5, -6), H-658T17 (Ch. V-2192, V-2192-1), H-663T17 (Ch. V-2192, V-2192-2).

TUNER REPLACEMENT

Tuner assembly V-9886-6 is stocked as replacement for the V-9886-5, V-10279-1, V-10279-2, and V-10500-1 tuners. The mounting for V-10279-1, and V-10279-2 tuners is slightly different from that of the V-9886-6 tuner. Therefore an adaptor plate V-9852-2 is required along with V-9886-6 tuner when replacing V-10279-1 and V-10279-2 tuners.

When replacing a V-10500-1 tuner with a V-9886-6 tuner the following changes are required:

1. Remove the .005MFD. capacitor connected from terminal #1 of the tuner to L10.
2. Connect a short lead between terminal # 1 of V-9886-6 tuner and terminal 3 of L10.
3. Connect a piece of copper braid between the ground lance on the tuner, terminal #1 of L10, and the ground lance of the trimmer for L11.
4. Remove the 800MMF. capacitor from the junction of R17, R18, R19, and connect to terminal #2 of L10.

The following production changes apply to the V-2192, -1, -2, -3 chassis.

TO PROVIDE INCREASED DECOUPLING OF THE VIDEO IF AND PREVENT REGENERATION

R22 was changed to 2700Ω.

A filament choke was added between pin 3 of V3 and pin 3 of V4.

TO INCREASE CONTRAST RANGE.

R30 was changed to 15KΩ.

R62 was changed to 18KΩ.

R32 was changed to 8200Ω and its low end removed from ground and connected to a voltage divider. The voltage divider consists of a 220KΩ resistor and a 2200Ω resistor. The 220KΩ resistor connects to the +120VDC bus for the IF stage and the 2200Ω resistor connects to ground. R32 was connected to the junction of the resistors.

(CONTINUED ON REVERSE SIDE)

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Models H-640T17, H-641K17, Chassis V-2192, V-2192-1 V-2192-2 V-2192-3 (Continued)

TO ELIMINATE DEGENERATION AT THE HIGH VIDEO FREQUENCIES.

In some chassis a 330MMF cpapcitor was added from the cathode of the video amplifier to ground. The resultant peaking improves the picture when low resolution picture is transmitted but may be detrimental when a high resolution picture is transmitted. Because of the arbitrary benefit the capacitor is omitted in later productions.

TO IMPROVE THE FOCUS

Pin 10 of the picture tube is removed from the +320VDC and connected to the junction of R88, C75 etc. located in the plate supply circuit for V18.

CHANGES IN VERTICAL DISCHARGE NETWORK

In some chassis R77 is changed to 3900Ω or 4700Ω.
In later productions R77 is changed to 4300Ω.

CHANGES IN HEIGHT CONTROL CIRCUIT.

In some chassis R3, the height control, is shunted with 330KΩ.
In later chassis the height control is shunted with 470KΩ for better overall vertical linearity.

TO IMPROVE AGC FILTERING AND STABILITY OF THE HORIZONTAL MV.

A .005MFD. capacitor was added from the cathode of the keyed AGC tube to ground.
The AGC filter resistor R33 was changed to 2200Ω.
C83 was changed to .25MFD.
R98, connected to the plate of the keyed AGC tube was changed to 270KΩ.
A resistor was connected in parallel with the ringing coil L27. In some chassis a 27KΩ resistor was used, while later chassis use 22KΩ.
An 800MFD. capacitor was added from the junction of R17, R18, R19 and R23 to ground.

TO ELIMINATE 4.5MC BEAT PATTERN FROM PICTURE.

In later production L11 was changed to air core reactor Part # V-10586-1 which has a higher Q providing greater attenuation of the sound IF carrier.

TO PROVIDE IMPROVED HORIZONTAL LINEARITY AND CORRECT PICTURE WIDTH.

In some chassis using horizontal output transformer V-10213-1 C80 and R94 were used in the cathode circuit of V19, horizontal output. In later productions the cathode of V19 was grounded, and C89 from the deflection yoke was disconnected from the +310VDC line and connected to pin 8 of the horizontal output transformer.

CHANGES IN HORIZONTAL OUTPUT CIRCUIT.

When horizontal output transformer V-10214-1 is used in the chassis the following changes were made:
C80 and R94 are in the cathode circuit of V19 when V-10214-1 is used.
C85 the HV filter capacitor was connected to ground instead of pin 7 of T2.
R99 in parallel with the width coil was omitted.
R80, plate decoupling resistor for the vertical output tube, was changed to 7500Ω.
A filament choke was inserted in series with the 1B3QT HV rectifier filament to limit filament current.
The horizontal winding of the deflection yoke is returned through C89 to +310VDC instead of terminal 8 of T2.

Model H-640T17, H-641K17, Chassis V-2192-4 V-2192-5 V-2192-6

Models H-640T17, H-641K17, H-655K17 and H-657K17 may use chassis V-2192-4, V-2192-5, V-2192-6. These chassis require longer shafts for the volume and contrast control and the off-on switch. The volume control is Part # V-9877-2. The contrast control is Part # V-9877-2 and the off-on switch is Part # V-9877-2. With the exception of the above parts chassis V-2192-4 is the same as V-2192; V-2192-5 is the same as V-2192-1; and V-2192-6 is the same as V-2192-3.

The following production changes apply to chassis V-2192-4, V-2192-5, and V-2192-6.

CHANGES IN HEIGHT CONTROL CIRCUIT.

In some chassis R3 the, height control, is 250KΩ Part # V-9813-4. When R3 is 250KΩ, a 470KΩ resistor is added in series between the control and the junction of C76 and R90 and R76 in series with the vertical hold control is changed to 270KΩ.

TO IMPROVE STABILITY OF THE HORIZONTAL MV.

C72 was changed to 47MMF.
C71 was changed to 120MMF.
A .1MFD. capacitor was added in parallel with the horizontal hold control.
R87 was changed to 270KΩ.

TO SUPPRESS RETRACE LINES.

A 470KΩ resistor was added from pin 2 of the picture tube to the junction of C34 and the arm of the brightness control

The electrical position of R77 and C62 was interchanged so that C62 connects to pin 2 of the vertical MV and R77 goes to ground.

The low side of C35 was removed from ground and connected to the junction of R77 and C62.

TO IMPROVE VERTICAL HOLD.

R72 was changed to 1800Ω.

ADDITION OF ADJACENT CHANNEL SOUND TRAP.

A 47.25MC trap consisting of a coil and capacitor in parallel was added to trap out the IF sound carrier of the lower adjacent channel. One end of the trap is connected to ground, and the other end is connected through a 1.5MMF. capacitor to the grid of V4, the 2nd. video IF amplifier.

Model H-658T17, Chassis V-2192, V-2192-1 Model H-663T17, Chassis V-2192, V-2192-2

Model H-658T17 uses chassis V-2192 or V-2192-1.
Model H-663T17 uses chassis V-2192 or V-2192-2.

PHOTOFACT* Folder

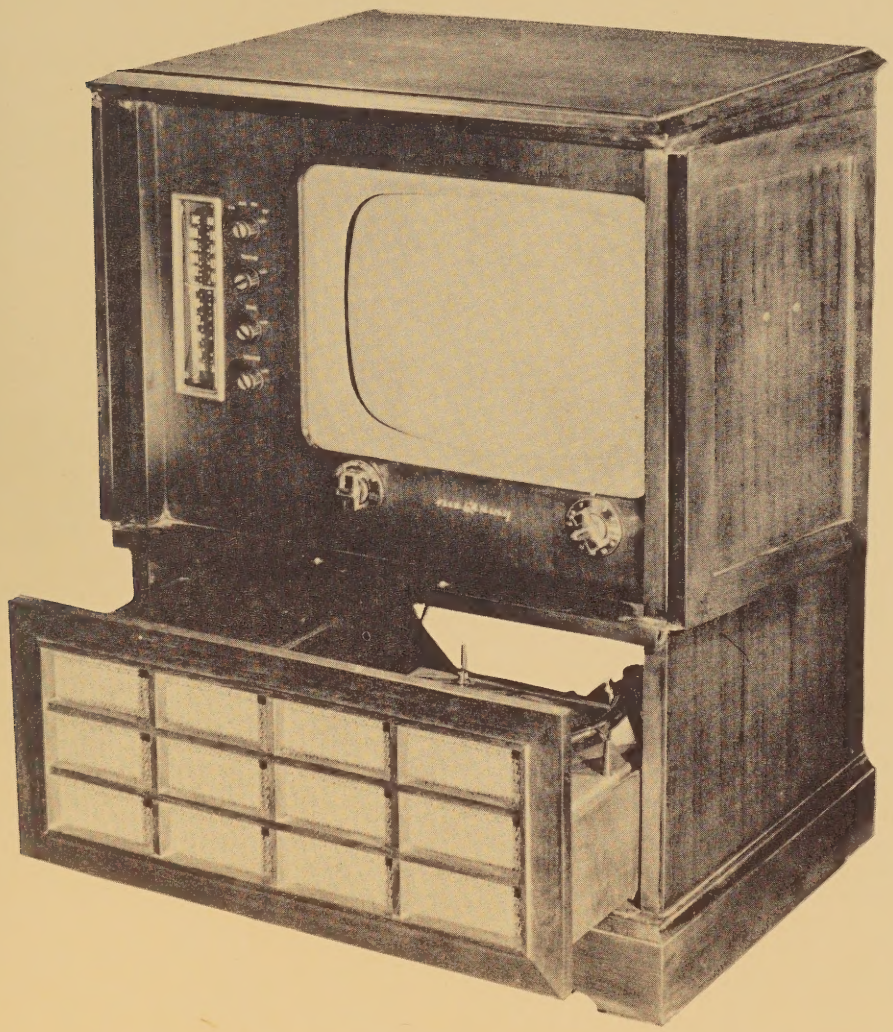
*TRADE MARK

AIR KING MODEL 17K1C (Ch. 700.110, 700.130)

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



AIR KING MODEL
17K1C (Ch. 700.110, 700.130)

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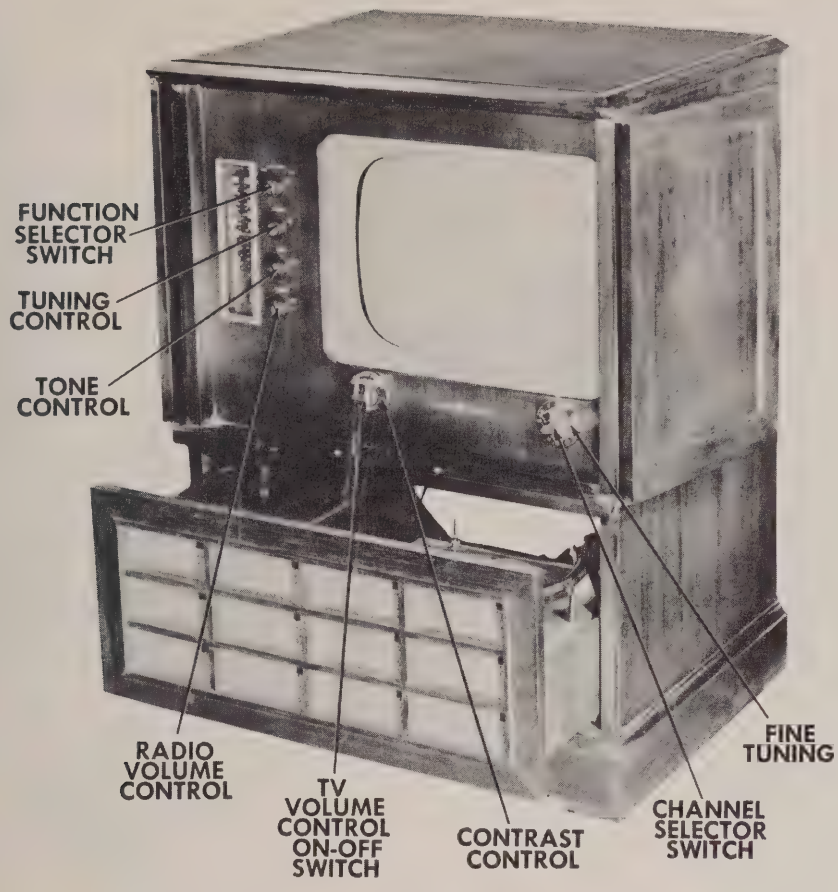
DATE 11-51 SET 150 FOLDER 2

AIR KING MODEL 17K1C (Ch. 700.110, 700.130)



AIR KING MODEL 17K1C (Ch. 700.110, 700.130)

AIR KING MODEL 17K1C

TRADE NAME	Air King, Model 17K1C (TV Ch. 700-110 and Radio Ch. 703)		
MANUFACTURER	Air King Products Co., 170 53rd. St., Brooklyn, New York		
TYPE SET	TV-AM-FM-Phono Combination Receiver		
TUBES	Twenty five		
POWER SUPPLY	110-120 Volts AC - 60 Cycle	RATINGS	(TV) 1.9 Amp. at 117 Volts AC (Radio) 1.3 Amp. at 117 Volts AC
TUNING RANGE	(TV) Channels 2 thru 13 (FM) 88-108MC (AM) 540-1620KC		

INDEX

Alignment Instructions 6, 7
Drive Cord Stringing 12
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Description ..... 13 thru 16
Photographs
- Cabinet - Rear View 11
- Capacitor and Alignment Identification (Radio) 17
- Capacitor and Alignment Identification (TV) 4, 9
- Chassis - Top View (Radio) 12
- Chassis - Top View (TV) 3
- RF Tuner (TV) 10
- Resistor and Inductor Identification (Radio) 17
- Resistor and Inductor Identification (TV) 19, 20

Schematic (Radio) 18
Schematic (TV) 2
Tube Placement Charts (TV) 5
Voltage and Resistance Measurements (Radio) 18
Voltage and Resistance Measurements (TV) 8

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT SEE VM MODEL 950 - PHOTOFACT SET # 107 FOLDER # 13 OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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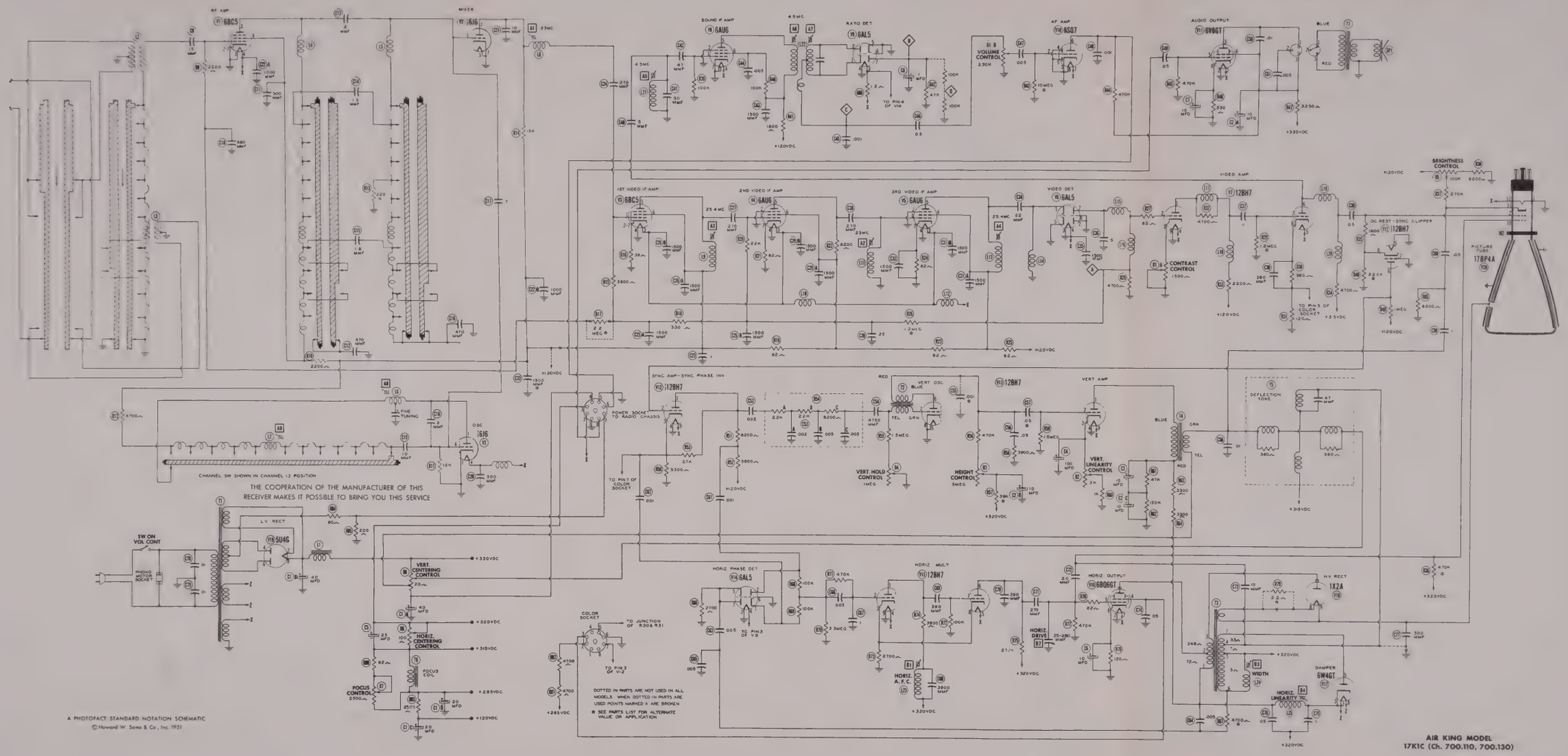
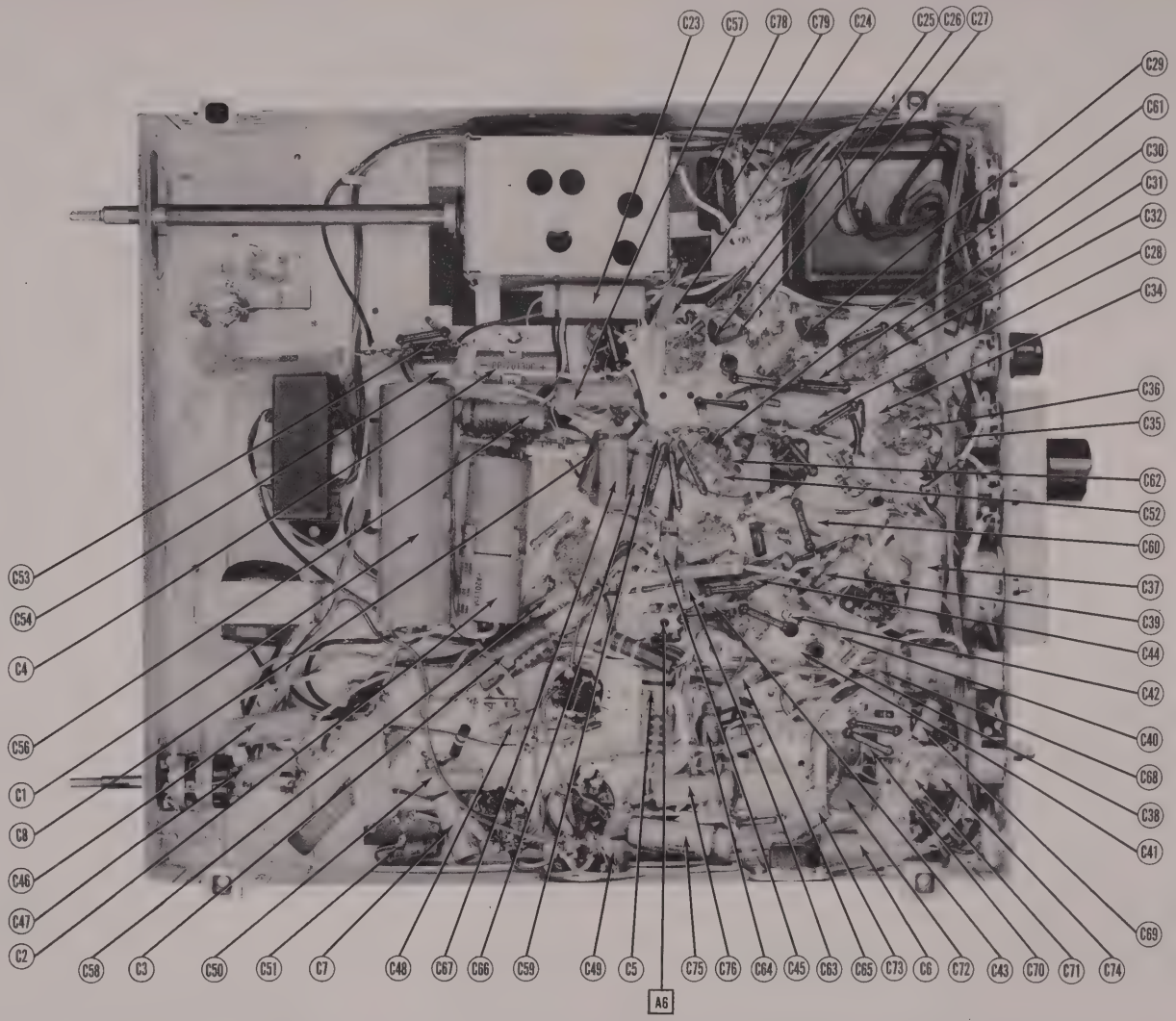


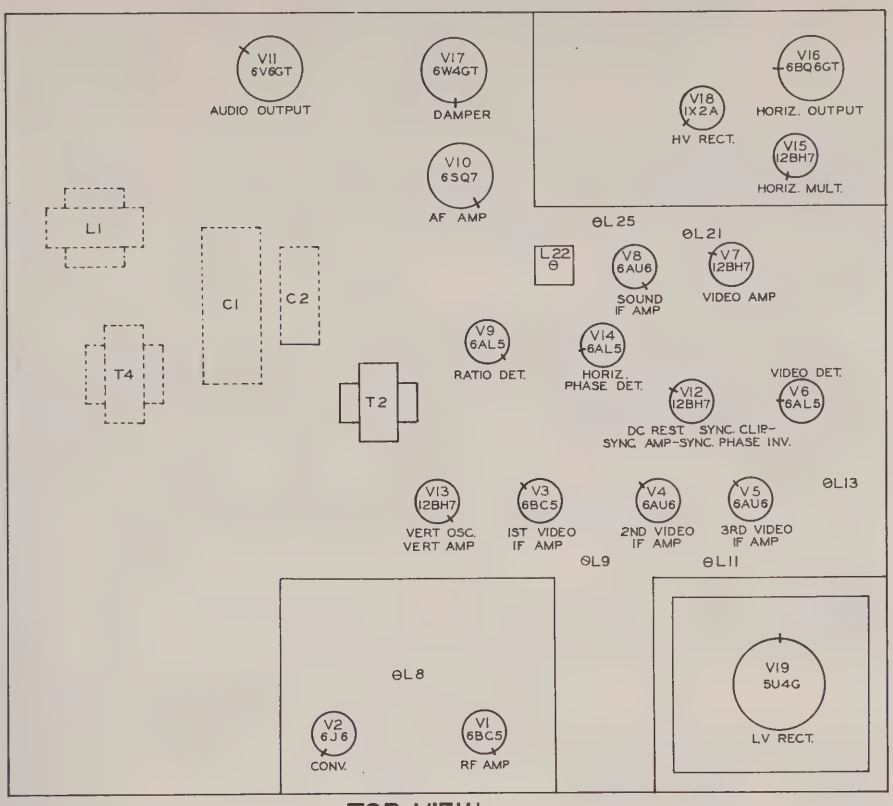
AIR KING MODEL
17K1C (Ch. 700.110, 700.130)

CHASSIS TOP VIEW

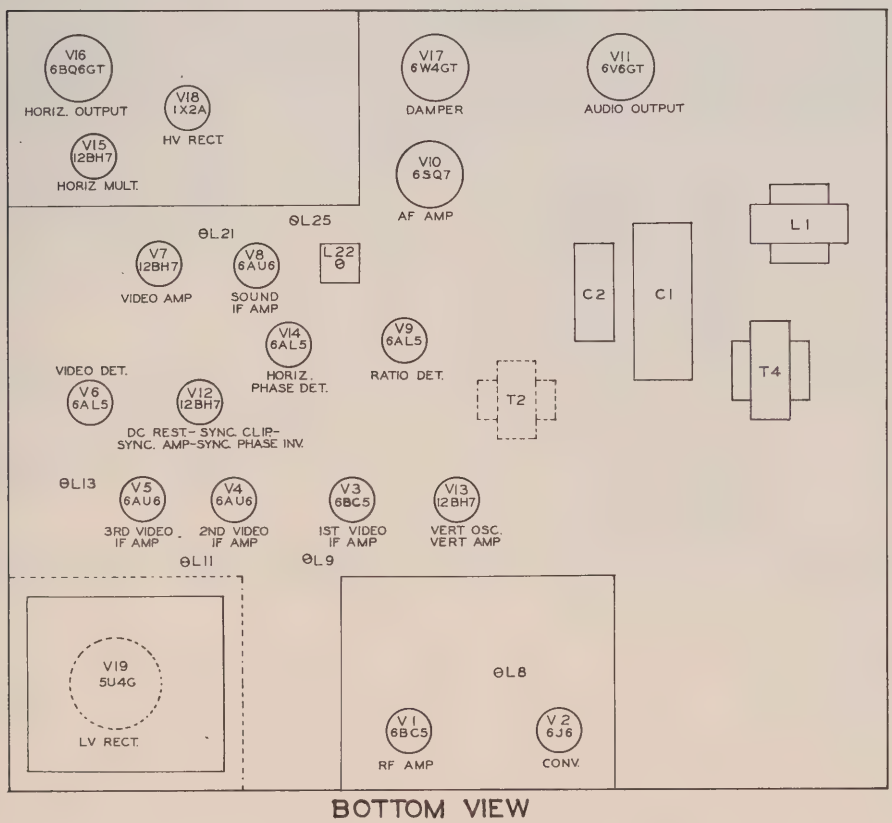
AIR KING MODEL
17K1C (Ch. 700.110, 700.130)



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage. If it is desired to operate the television set without the radio connected, it will be necessary to connect three jumpers on the radio cable socket. Connect the jumpers between pins 3 and 4, pins 5 and 7, and pins 6 and 8. If the radio chassis is connected, turn the function selector to TV, (maximum clockwise).

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C28, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	23MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	25.4MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	23MC (10MC SWP)	21.9MC 26.4MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD.	High side to pin 7, (Grid), of 12BH7, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A5, A6	Adjust for maximum amplitude.
5.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A7	Adjust for zero reading. A positive and negative reading will obtained on either side fo the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD.	High side to pin 7, (Grid), of 12BH7, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per figure 2.
5.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A7	Reconnect capacitor C8. Adjust A7 until 4.5MC occurs at center of crossover lines as per figure 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Re move the dummy converter tube and replace the original 6J6 in its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A8	Adjust to place video marker at 50% as shown in figure 4.
7.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check to see that the video marker can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A8.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
8.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A9	Adjust to place video marker at 50% as shown in figure 4.
9.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see that the video marker can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A9.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

THE RF PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND SHOULD NOT REQUIRE ADJUSTMENT IN THE FIELD.

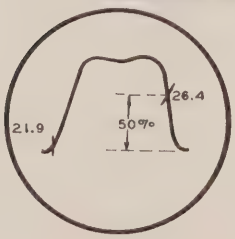


FIG. 1

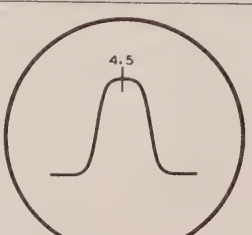


FIG. 2

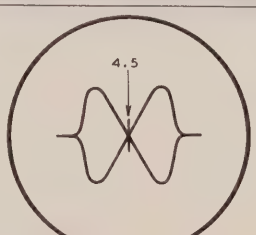


FIG. 3

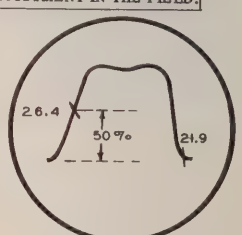


FIG. 4

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The radio chassis must be plugged into the TV chassis to operate.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10.	.01MFD.	High side to pin 2, (Grid), of 12AT7, (V21). Low side to chassis.	455KC (400∿ Mod.)	AM (Second pos. CW)	Tuning gang fully open.	Across voice coil.	A10, A11, A12, A13	Adjust for maximum output.
11.	"	"	1600KC	"	1600KC	"	A14	"
12.	"	Loop	1400KC	"	1400KC	"	A15	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point E to chassis. The junction of these two resistors is alignment Point G as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.01MFD.	High side to pin 1, (Grid), of 6AU6, (V22). Low side to chassis.	10.7MC (unmod.)	FM (Max. CCW)	Tuning gang fully open.	DC probe to Point (F). Common to chassis.	A16, A17	Adjust for maximum deflection.
14.	"	High side to pin 2, (Grid), of 12AT7, (V21). Low side to chassis.	"	"	"	"	A18, A19	"
15.	"	"	"	"	"	DC probe to Point (F). Common to Point (G).	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
13.	.01MFD.	High side to pin 1, (Grid), of 6AU6, (V22). Low side to chassis.	10.7MC (450KC SWP)	FM (Max. CCW)	Point of non-interference.	Vert. Amp. to Point (E). Low side to chassis.	A16, A17	Disconnect stabilizer capacitor C81. Adjust for maximum amplitude and symmetry as per figure 5.
14.	"	High side to pin 2, (Grid), of 12AT7, (V21). Low side to chassis.	"	"	"	"	A18, A19	"
15.	"	"	"	"	"	Vert. Amp. to Point (F). Low side to chassis.	A20	Reconnect capacitor C81. Adjust A20 so 10.7 MC occurs at center of crossover lines as per figure 6. SLIGHTLY retouch A16 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
16.	300Ω carbon resistors	High side thru 300Ω to ungrounded antenna terminal on radio chassis. Low side to chassis.	108MC (unmod.)	FM	108MC	DC probe to Point (E). Common to chassis.	A21	Adjust for maximum deflection.
17.	"	"	105MC	"	105MC	"	A22	"

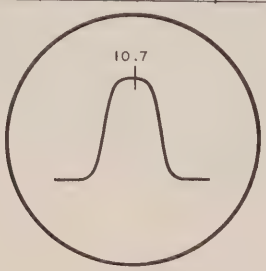


FIG. 5

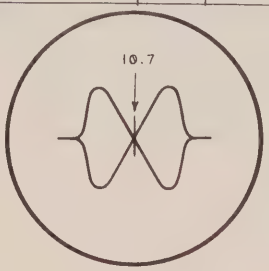


FIG. 6

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	-.5VDC	0V	0V	6.3VAC	90VDC	90VDC	0V		
V 2	6J6	65VDC	70VDC	0V	6.3VAC	-2.1VDC	§-2.8VDC	0V		
V 3	6BC5	-.2VDC	.4VDC	5.9VAC	0V	110VDC	110VDC	.4VDC		
V 4	6AU6	-.2VDC	0V	5.9VAC	0V	65VDC	115VDC	.7VDC		
V 5	6AU6	0V	0V	6VAC	0V	115VDC	115VDC	.9VDC		
V 6	6AL5	0V	0V	0V	6.3VAC	0V	0V	-.5VDC		
V 7	12BH7	100VDC	-.4VDC	2.7VDC	6.3VAC	6.3VAC	240VDC	0V	9.8VDC	0V
V 8	6AU6	-.6VDC	0V	0V	6.3VAC	115VDC	43VDC	0V		
V 9	6AL5	-.4VDC	-.4VDC	5.5VAC	0V	0V	0V	-.8VDC		
V 10	6SQ7	0V	-.7VDC	0V	0V	0V	80VDC	6.3VAC	0V	
V 11	6V6GT	0V	0V	195VDC	210VDC	0V	0V	6.3VAC	11VDC	
V 12	12BH7	43VDC	20VDC	20VDC	0V	0V	20VDC	0V	3.2VDC	6.3VAC
V 13	12BH7	390VDC	§.3VDC	20VDC	0V	0V	65VDC	§-30VDC	0V	6.3VAC
V 14	6AL5	5.2VDC	-5.8VDC	0V	5.5VAC	0V	0V	0V		
V 15	12BH7	315VDC	§-.1VDC	17VDC	6.3VAC	6.3VAC	85VDC	§-2.3VDC	17VDC	0V
V 16	6BQ6GT	-3.5VDC	0V	0V	145VDC	-3.5VDC	0V	6.3VAC	13VDC	Top Cap *
V 17	6W4GT	320VDC	0V	490VDC	0V	320VDC	0V	490VDC	490VDC	
V 18	1X2A	* DO NOT MEASURE								
V 19	5U4G	0V	340VDC	0V	330VAC	0V	330VAC	0V	340VDC	
V 20	17BP4A	0V	3.2VDC	PIN 10 260VDC	PIN 11 33VDC	PIN 12 6.3VAC	H.V. CONNECTOR ** 8K.V.			

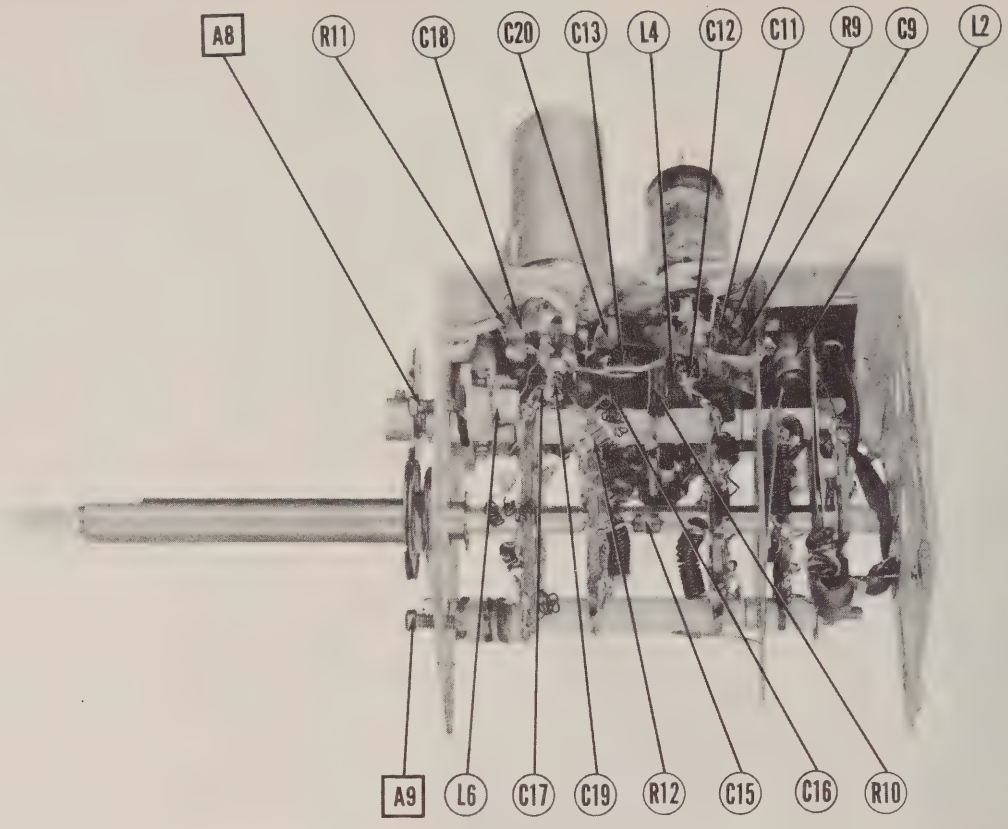
ALL MEASUREMENTS TAKEN IN T V. POSITION
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE
ALL CONTROLS SET FOR NORMAL OPERATION

RESISTANCE READINGS

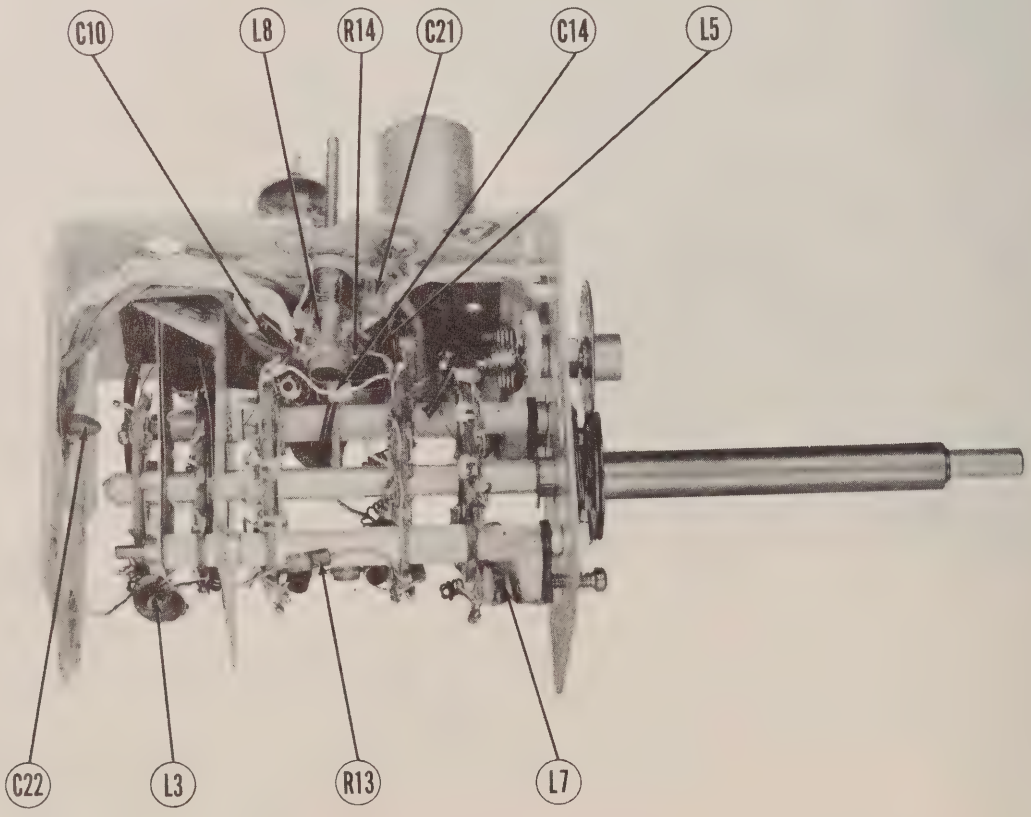
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	3.2Meg	0Ω	0Ω	.1Ω	†5.6KΩ	†5.6KΩ	0Ω		
V 2	6J6	†8KΩ	†18KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6BC5	1Meg	39Ω	.4Ω	0Ω	†3.4KΩ	†3.4KΩ	39Ω		
V 4	6AU6	1Meg	0Ω	.4Ω	0Ω	†12KΩ	†3.3KΩ	82Ω		
V 5	6AU6	.2Ω	0Ω	.2Ω	0Ω	†2.6KΩ	†2.6KΩ	82Ω		
V 6	6AL5	2.9Ω	0Ω	0Ω	.1Ω	0Ω	0Ω	4.7KΩ		
V 7	12BH7	†4.8KΩ	4.7KΩ	200Ω	.1Ω	.1Ω	†4.7KΩ	1.2Meg	680Ω	0Ω
V 8	6AU6	100KΩ	0Ω	0Ω	.1Ω	†4.4KΩ	†100KΩ	0Ω		
V 9	6AL5	Inf.	Inf.	.7Ω	0Ω	0Ω	0Ω	47KΩ		
V 10	6SQ7	0Ω	10Meg	0Ω	0Ω	0Ω	†470KΩ	.1Ω	0Ω	
V 11	6V6GT	Inf.	0Ω	†3.8KΩ	†3.3KΩ	470KΩ	Inf.	.1Ω	330Ω	
V 12	12BH7	†13KΩ	†1Meg	3.3KΩ	0Ω	0Ω	†1Meg	0Ω	220KΩ	.1Ω
V 13	12BH7	#7.7KΩ	1.5Meg	1.9KΩ	0Ω	0Ω	†2.2Meg	2Meg	0Ω	.1Ω
V 14	6AL5	3.4Meg	3.4Meg	0Ω	.7Ω	2.7KΩ	0Ω	2.7KΩ		
V 15	12BH7	†3.9KΩ	3.7Meg	2.7KΩ	.1Ω	.1Ω	†270KΩ	100KΩ	2.7KΩ	0Ω
V 16	6BQ6GT	470KΩ	0Ω	Inf.	†10KΩ	470KΩ	Inf.	.1Ω	150Ω	Top Cap #100Ω
V 17	6W4GT	80Ω	Inf.	160KΩ	Inf.	†90Ω	Inf.	#.1Ω	#0Ω	
V 18	1X2A	PINS 1-9 HAVE INF. RESISTANCE								Top Cap #420Ω
V 19	5U4G	Inf.	29KΩ	Inf.	90Ω	Inf.	95Ω	Inf.	29KΩ	
V 20	17BP4A	0Ω	220KΩ	PIN 10 †470KΩ	PIN 11 †270KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN IN T V. POSITION
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17
ALL CONTROLS SET FOR NORMAL OPERATION

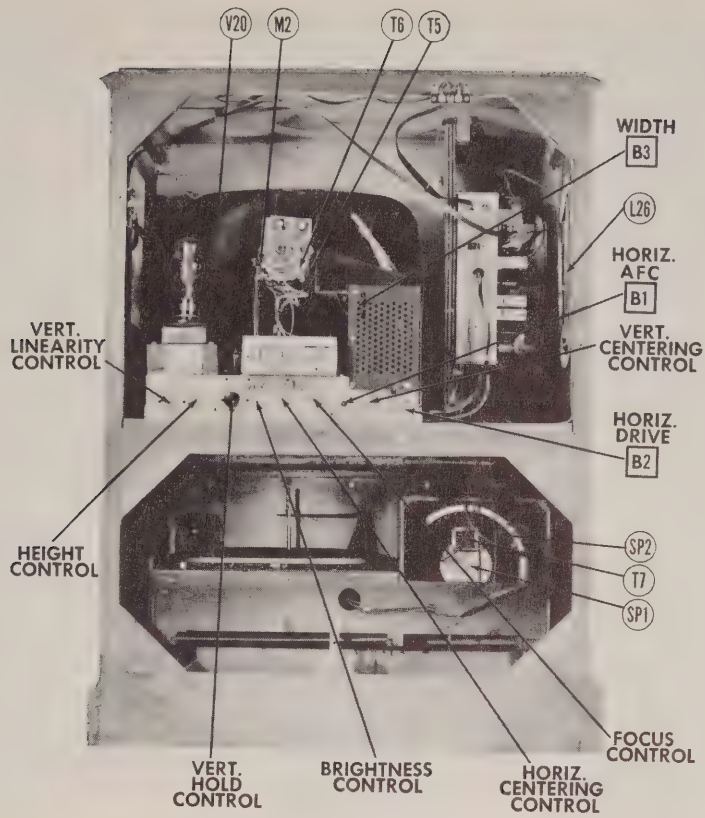
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal AFC slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2) counter-clockwise as far as possible without crowding appearing in the picture.

Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since width and horizontal linearity are both effected by the horizontal drive trimmer it may be necessary to adjust them alternately for optimum results.

DISASSEMBLY INSTRUCTIONS

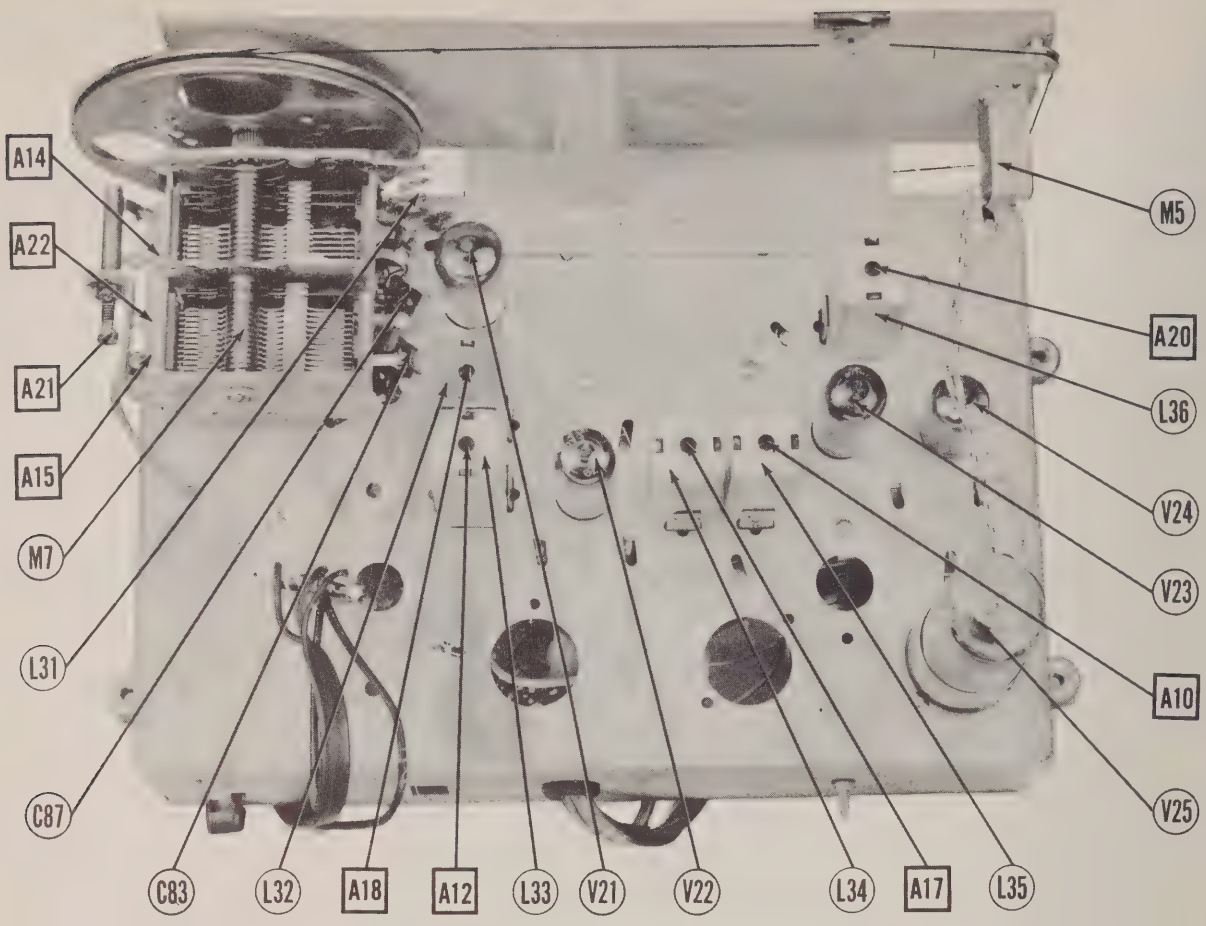
TV CHASSIS REMOVAL:

1. Remove four push-on type control knobs.
2. Remove fourteen wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Disconnect phono motor.
7. Disconnect radio power plug.
8. Remove four 3/8" hex head bolts from chassis. Remove chassis.
9. Remove four 11/32" hex nuts from speaker. Remove speaker.

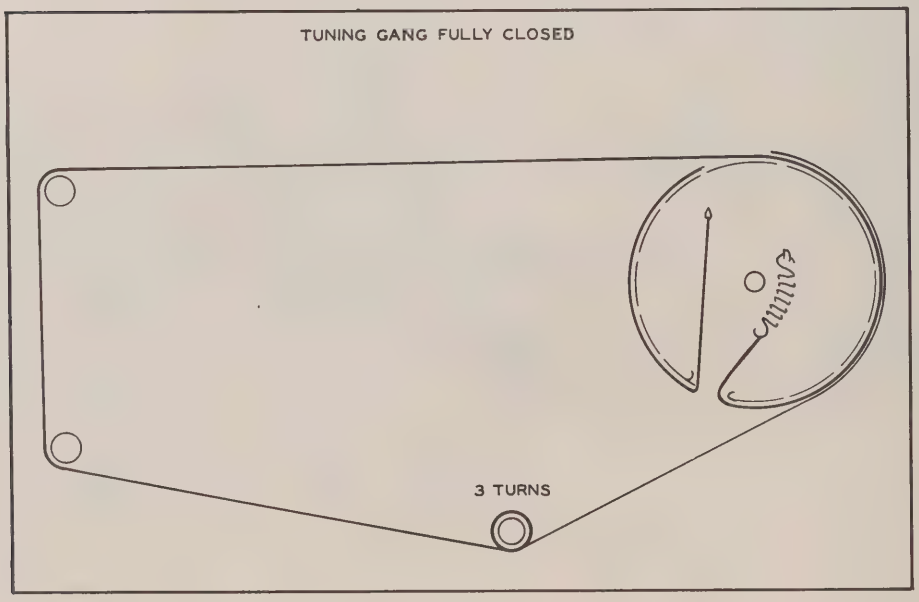
NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE TV CHASSIS AS OUTLINED ABOVE.

RADIO CHASSIS REMOVAL

1. Remove four push-on type control knobs.
2. Disconnect AM loop.
3. Disconnect FM antenna.
4. Disconnect phono audio jack.
5. Remove four wing bolts from chassis. Remove chassis.



RADIO CHASSIS-TOP VIEW



DIAL CORD STRINGING

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J5	6J5	7BF	
V3	1st. Video IF Amp.	6BC5	6BC5	7BD	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Detector	6AL5	6AL5	6BT	
V7	Video Amplifier	12BH7	12BH7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AF Amplifier	6SQ7	6SQ7	8Q	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	DC Restorer-Sync. Clipper-Sync. Amp Sync. Phase Inv.	12BH7	12BH7	9A	
V13	Vert. Oscillator-Vert. Amplifier	12BH7	12BH7	9A	
V14	Horiz. Phase Det.	6AL5	6AL5	6BT	
V15	Horizontal Mult.	12BH7	12BH7	9A	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1X2A	1X2A	9Y	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RTMA BASE TYPE	NOTES
V20	17BP4A	17BP4A	17BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	A20144	PRS450/40-40		UPT4445		TVA-2740	Filter
B	40	450		PRS450/20-20		BRD2245		TVA-2730	Filter
C	20	450							Decoupling
D	20	450							Filter
C2A	10	450	A20135	AFH3-31		UPT11145		TVL-3776	Audio Output Dec.
B	10	450							Vert. Osc. Dec.
C	10	450							Vert. Amp. Dec.
C3	10	250	A20145	PRS250/12		BR1225A		TVA-1504	Vert. Amp. Dec.
C4	100	25	A20130	PRS25/100		BRH251A		TVA-1207	Vert. Amp. Cathode
C5	25	12	A20147	PRS25/25		BR252A		TVA-1205	Horiz. Cent. Cont. Bypass
C6	10	25	A20137	PRS25/10		BR102A		TVA-1204	Horiz. Output Cathode
C7	10	25	A20137	PRS25/10		BR102A		TVA-1204	Audio Output Cathode
C8	1	50	A20138	E26E39		BBR-1-50		TVA-1300	Stabilizing Cap.
C9	15			SI15	D6-150		GP1K-150	5GA-Q15	RF Coupling
C10	680			SI680	D6-681		GP2K-681	5GA-T68	AGC Filter
C11	500			SI500	D6-501		GP2K-501	5GA-T5	RF Amp. Screen
C12	470			SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Plate
C13	2				TCZ-2.2		NP0K-2R2		RF Coupling
C14	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C15	1.8								RF Coupling
C16	470			SI470	D6-471		GP2K-471	5GA-T47	Mixer Grid Cap.
C17	.7				TCZ-.68		NP0K-R68		Osc. Coupling
C18	3						N330K-030		Osc. Feedback
C19	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C20	500			SI500	D6-501		GP2K-501	5GA-T5	Conv. Fil.
C21	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22A	1000			BPD-2X001	DD-2-102		812-001	5HK-2D1	RF Amp. Fil.
B	1000								RF Bypass
C23	.1	600	A194-162	P688-1	DF-104	PTE6P1		6TM-P1	RF Bypass
C24	270	500	A190-133	1468-0003	D6-471	5W5T3	GP2K-271	MS-33	IF Coupling
C25A	1500		A19147	BPD-2X0015	DD-2-152	1W5D15	801-0015	5HK-2D15	AGC Filter
B	1500					1W5D15			AGC Filter
C26A	1500		A19147	BPD-2X0015	DD-2-152	1W5D15	801-0015	5HK-2D15	1st. Video IF Decoupling
B	1500					1W5D15			1st. Video IF Fil.
C27	270	500	A190-133	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C28	.25	200	A194-67	P488-25		GT2P25		2TM-P25	AGC Filter
C29A	1500		A19147	BPD-2X0015	DD-2-152	1W5D15	801-0015	5HK-2D15	2nd. Video IF Decoupling
B	1500					1W5D15			2nd. Video IF Fil.
C30	270	500	A190-133	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C31A	1500		A19147	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	3rd. Video IF Dec.
B	1500					1W5D15			3rd. Video IF Fil.
C32	1500		A19148	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	3rd. Video IF Cathode
C33	1500		A19148	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass *
C34	22	500	A190-107	1468-000025	D6-220	5W5Q25	GP1K-220	MS-425	IF Coupling
C35	1500		A19148	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	Video Det. Fil.
C36	5		A555-100	SI5NP0			NP0K-050		Video Det. Filter
C37	.1	600	A194-162	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C38	390	500	A190-137	1469-0004		5R5T4		MS-34	Video Amp. Cathode
C39	.05	600	A194-160	P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C40	5		A555-100	SI5		5W5V5	GP1K-050		Sound IF Coupling
C41	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	Fixed Trimmer
C42	47		A555-113-2		TCZ-47		NP0L-470	5TCC-Q47	Sound IF Coupling
C43	1500		A19148	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	Sound IF Plate
C44	.005	600	A194-151	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Sound IF Screen
C45	.001	600	A194-145	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C46	.05	600	A194-160	P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C47	.005	600	A194-151	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C48	.001	600	A194-145	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AF Amp. Plate
C49	.05	600	A194-160	P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C50	.01	600	A194-155	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C51	.005	600	A194-151	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C52	.002	600	A194-146	P688 -002	D6-102	PTE6D2	GP2-333-202	6TM-D2	Vert. Sync. Coupling
C53A	.002		♦PB-20150	P688-005	♦PC-100	PTE6D5	GP2-333 -202	♦101C1	Vert. Integrator Net.
B	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIR KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	4700	500	A192-163	1464-005		IDR5D5		MS-25	Vert. Osc. Grid
C55	001	600	A194-145	P088-001	D6-103	PTE6D1	GP2L-103	6TM-D1	Vert. Discharge †
C56	05	600	A194-160	P088-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C57	05	600	A194-160	P088-05	DF-503	PTE6S5		6TM-S5	Vert. Sweep Coupling †
C58	01	600	A194-155	P088-01	D6-103	PTE6S1	GP3-333-103	6TM-S1	Integrator Net.
C59	1	600	A194-162	P088-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C60	05	600	A194-160	P088-05	DF-503	PTE6S5		6TM-S5	Vert. Sweep Coupling
C61	001	500	A194-145	P088-001	D6-102	PTE6D1	GP2L-103	6TM-D1	Horiz. Sync. Coupling
C62	001	600	A194-145	P088-001	D6-103	PTE6D1	GP2L-103	6TM-D1	Horiz. Sync. Coupling
C63	005	600	A194-151	P088-005	D6-502	PTE6D5	GP3-333-503	6TM-D5	Horiz. Feedback
C64	005	600	A194-151	P088-005	D6-502	PTE6D5	GP3-333-502	6TM-D6	Horiz. Feedback
C65	005	600	A194-151	P088-005	D6-502	PTE6D5	GP3-333-502	6TM-D5	Voltage Divider
C66	005	600	A194-151	P088-005	D6-502	PTE6D5	GP3-333-503	6TM-D5	AFC Filter
C67	1	200	A194-96	P088-1	DF-104	PTE4P1		2TM-P1	AFC Filter
C68	3900	500	A195-361	1464-004		IDR5D4			Fixed Trimmer
C69	390	500	A190-137	1469-0004		5R5T4		MS-34	Horiz. M-V Feedback
C70	390	500	A190-137	1469-0004		5R5T4		MS-34	Horiz. Discharge
C71	270	500	A190-133	1468-0068	D6-271	5W5T3	GP3K-271	MS-33	Horiz. Sweep Coupling
C72	20	1500	A19172						Horiz. Feedback
C73	10	2500	A19146						Horiz. Feedback
C74	05	600	A194-160	P088-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C75	1	600	A194-162	P088-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C76	05	600	A194-160	P088-05	DF-503	PTE6S5		6TM-S5	Damper Filter
C77	500	20000	A1908-3	HV30-A	TV1-503				HV Filter
C78	.01	600	A19106	P088-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C79	.01	600	A19106	P088-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter

* Not used in all models.
† Used only with Vert. Osc. Trans. Part # PB161125.
‡ Some models use .02MFD. in this application.
♦ Items C53A, C53B, C53C, R54A, R54B, R54C are combined in one unit in some models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIR KING PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1500Ω	½	A24124				Contrast Control
B	250KΩ	½					Volume Control and Switch
R2A	3000Ω	½	A24124	Q11-112	AM-15-S	AN-7	Vertical Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R2A per instructions
R3A	5Meg	½	A24111	Q11-141	AG-85-S	AN-87	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R3A per instructions
R4A	1Meg	½	A24112	Q11-137	AG-81-S	AN-89	Vertical Hold Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	100KΩ	½	A24110	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6	100Ω	2	A24116	W-100		VK-121	Horiz. Centering - Wire Wound
R7	2500Ω	6	A24113			RTV-183	Focus Control - Wire Wound
R8	20Ω	2	A24118	W-20X10		RTV-3	Vertical Centering - Wire Wound

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIR KING PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	2200Ω	20% ½		BTS-2200	RF Amp. Grid
R10	2200Ω	20% ½		BTS-2200	RF Amp. Decoupling
R11	15KΩ	20% ½		BTS-15K	Osc. Grid
R12	4700Ω	20% ½	A231-1165	BTS-4700	Osc. Decoupling
R13	220KΩ	20% ½		BTS-220K	Mixer Grid
R14	15KΩ	½		BTS-15K	Mixer Plate
R15	5600Ω	½	A231-1167		1st. Video IF Amp. Grid
R16	39Ω	½	A231-1115		1st. Video IF Amp. Cathode
R17	2.2Meg	½		BTS-2.2Meg	AGC Network - See Note 3
R18	330Ω	½	A231-1137	BTS-330	AGC Network
R19	82Ω	½	A231-1123	BTS-82	Decoupling
R20	22KΩ	½	A231-1181	BTS-22K	2nd. Video IF Amp. Grid
R21	62Ω	½	A231-1133	BTS-82	2nd. Video IF Amp. Cathode
R22	8200Ω	1	A232-1171		2nd. Video IF Amp. Plate
R23	82Ω	½	A231-1123	BTS-82	Decoupling
R24	62Ω	½	A231-1133	BTS-82	3rd. Video IF Amp. Cathode
R25	82Ω	½	A231-1123	BTS-82	Decoupling
R26	1.3Meg	½		BTS-1.3Meg	AGC Network -See Note 3
R27	82Ω	½	A231-1123		Parasitic Suppressor
R28	4700Ω	½	A231-1165	BTS-4700	Video Amp. Grid
R29	1.3Meg	½		BTS-1.3Meg	Video Amp. Grid - See Note 3
R30	560Ω	½	A231-1143	BTS-560	Video amp. Cathode
R31	120Ω	½		BTS-120	Video Amp. Cathode
R32	4700Ω	½	A231-1165	BTS-4700	Peaking Coil Shunt
R33	2200Ω	1	A231-1127	BTA-2200	Video Amp. Plate
R34	4700Ω	2	A232-1165	BTS-4700	Video Amp. Plate
R35	1800Ω	½	A231-1155	BTS-1800	Picture Tube Grid
R36	470KΩ	½	A231-1213	BTS-470K	Acc. Anode Load - See Note 6
R37	270KΩ	½	A231-1207	BTS-270K	Picture Tube Cathode
R38	8200Ω	½	A231-1171	BTS-8200	Voltage Divider
R39	100KΩ	½	A231-1197		Sound IF Amp. Grid
R40	100KΩ	½	A231-1197	BTS-100K	Sound IF Amp. Screen
R41	1800Ω	½	A231-1155	BTS-1800	Sound IF Amp. Decoupling
R42	47KΩ	½	A231-1189	BTS-47K	Ratio Detector Diode Load
R43	10Meg	½		BTS-10Meg	AF Amp. Grid - See Note 7
R44	470KΩ	½	A231-1213	BTS-470K	AF Amp. Plate
R45	470KΩ	1	A231-1213	BTS-470K	Output Grid
R46	330Ω	1	A232-1137	BTA-330	Output Cathode
R47	3250Ω	10	A21111		Decoupling - Wire Wound
R48	220KΩ	½		BTS-220K	DC Restorer Diode Load - See Note 6
R49	1Meg	½	A231-1231	BTS-1Meg	Sync. Clipper Plate
R50	3300Ω	½	A231-1181	BTS-3300	Sync. Phase Inverter Cathode
R51	8200Ω	½	A231-1171	BTS-8200	Sync. Phase Inverter Plate
R52	5600Ω	½	A231-1167	BTS-5600	Sync. Phase Inverter Plate
R53	27KΩ	½	A231-1183	BTS-27K	Voltage Divider

RESISTORS (CONT.)

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIR KING PART No.	IRC PART No.	IDENTIFICATION CODES
R54A	22KΩ		♦PB-20150	BTS-22K	Integrator
B	22KΩ			BTS-22K	Integrator
C	8200Ω			BTS-8200	Integrator
R55	1.5Meg	½	A231-1225	BTS 1.5Meg	Vertical Osc. Grid
R46	470KΩ	½	A231-1213	BTS-470K	Vertical Osc. Plate
R57	39KΩ	½		BTS 39K	Decoupling - See Note 4
R58	3900Ω	½	A231-1163	BTS 3900	Vertical Peaking
R59	1.5Meg	½	A231-1225	BTS-1.5Meg	Vertical Amp. Grid
R60	1000Ω	½	A231-2249	BTS-1000	Vertical Amp. Cathode
R61	47KΩ	1	A232-1189	BTA-47K	Vertical Amp. Decoupling
R62	150KΩ	1	A232-1201	BTA-150K	Vertical Amp. Decoupling
R63	3300Ω	2	A233-1181	BTB-3300	Vertical Amp. Decoupling
R64	3300Ω	2	A233-1181	BTB-3300	Voltage Divider
R65	8200Ω	½	A231-1171	BTS-8200	Vertical Retrace Blanking
R66	2700Ω	½	A231-1159	BTS-2700	Horiz. Feedback
R67	4700Ω	½	A231-1165	BTS-4700	Horiz. Feedback - See Note 5
R68	100KΩ	½	A231-1197	BTS-100K	Horiz. Phase Detector Diode Load
R69	100KΩ	½	A231-1197	BTS-100K	Horiz. Phase Detector Diode Load
R70	3.3Meg	½	A231-1233	BTS-3.3Meg	Horiz. Phase Detector Diode Load
R71	470KΩ	½	A231-1213	BTS-470K	AFC Filter
R72	100KΩ	½	A231-1197	BTS-100K	Horiz. MV Grid
R73	2700Ω 20%	½	A231-1159	BTS-2700	Horiz. MV Cathode
R74	3900Ω	½	A231-1163	BTS-3900	Horiz. MV Plate
R75	270KΩ	½	A231-1207	BTS-270K	Horiz. MV Plate
R76	82Ω	½	A231-1123		Parasitic Suppressor
R77	470KΩ	½	A231-1213	BTS-470K	Horiz. Output Grid
R78	150Ω	2	A233-1129		Horiz. Output Cathode
R79	2.2Ω	2	A23153		HV Filament - See Note 1
R80	82Ω	½	A231-1123	BTS-82	Focus Coil Shunt
R81	4700Ω	3	A233-1165	BTB-4700	Voltage Divider
R82	4700Ω	3	A233-1165	BTB-4700	Voltage Divider
R83	2500Ω	15	A2110	3D-2500	Filter - Wire Wound
R84	60Ω	10	A21107		Voltage Divider - Wire Wound
R85	220Ω	10			Voltage Divider - Wire Wound
R86	1.2Ω	1	A23151	BW-1-1.2	Filament Series Wire Wound

* Items R54A, R54B, R54C, C53A, C53B, C53C are combined in one unit in some models.
Note 1 Not used in all models.
Note 2 Some models use 3.3Meg resistor in this application.
Note 3 Some models use 1Meg resistor in this application.
Note 4 Some models use 47KΩ resistor in this application.
Note 5 Some models use 2700Ω resistor in this application.
Note 6 Some models use resistors in series to obtain desired value.
Note 7 Some models use resistors in parallel to obtain desired value.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.8A	680V CT .230ADC	5VAC ② 3A	.6 3VAC ② 1.2A SEC. 4 6.3VAC ② 9A	A10109		P-3069	

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	160Ω	940Ω	A10106	A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	430Ω Tap 72Ω	1Ω Taps .5Ω and 7.5Ω	A10104	A-8130			Horiz. Output Trans.
T4	1.1KΩ	7Ω	A-1350-2	A-8112 ①	A-3026 ①	TSO-5 ①	Vert. Output Trans.
T5A	13Ω		A-38278-2	DY-7	MDY-70		Horiz. Deflection Coils
B	60Ω						Vert. Deflection Coils
T6	1KΩ		A-38282				Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	4.2KΩ	3.5Ω	480Ω	1Ω A-28286	A-3877	A-3930	RO-9 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS RES.	RATINGS V. C. IMP.	REPLACEMENT DATA AIR KING PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	PM		3.5Ω		5J4	5A1	
B	PM		3.5Ω		8J12	8A31	
C	PM		3.5Ω		12J12	12A4A	
	CONE DIA.		V. C. DIA.				
SP2A	5"		9/16"				
B	8"		1"				
C	10"		1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ~♦	REPLACEMENT DATA AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.220A	61Ω	1.7Henries	A-1406	C-2326 ①	C-2091 ①	TR-330① ①	Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIR KING PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω			
L3	Ant. Coil	0Ω	0Ω			
L4	RF Coil	0Ω				
L5	Mixer Grid Coil	0Ω				
L6	Osc. Coil	0Ω				
L7	Osc. Coil	0Ω				
L8	1st. Video IF	.5Ω				
L9	2nd. Video IF	.3Ω		A3392		
L10	Fil. Choke	.2Ω		A38278	CL-1	.82 Microhenry
L11	3rd. Video IF	.3Ω		A3392		
L12	Fil. Choke	.2Ω		A38278	CL-1	.82 Microhenry
L13	4th Video IF	2Ω		A3392		
L14	RF Choke	2.9Ω		A28253		
L15	Peaking	6.2Ω		A28255-2		White dot
L16	Peaking	5.1Ω		A28255-1		Red dot
L17	Peaking	6.2Ω		A28255-2		White dot
L18	Peaking	5.1Ω		A28255-1		Red dot
L19	Peaking	5.1Ω		A28255-1		Red dot
L20	Peaking	4.0Ω		A28255-4		Green dot
L21	Sound IF	1.9Ω		A28286		
L22	Ratio Det. Trans.	5.8Ω	3Ω	A1301-1202		Tap 1 7Ω
L23	Horiz. Osc.	61Ω		A28263		
L24	Width Coil	1Ω		A38279		
L25	Horiz. Lin.	30Ω		A28292		

MISCELLANEOUS

ITEM No.	PART NAME	AIR KING PART No.	NOTES
M1	RF Tuner		
M2	Ion Trap	A54794	
B2	Trimmer	A1772	(35-280MMF) Horiz. Drive

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA PART No.	REPLACEMENT DATA STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V21	FM-AM Converter	12AT7	12AT7	9A	
V22	1st. FM-AM IF Amplifier	6AU6	6AU8	TBK	
V23	2nd. FM IF Amp.	6AU6	6AU8	TBK	
V24	Ratio Detector	6AL5	6AL5	6BT	
V25	AM Detector-AVC-AF Amplifier	88Q7	6BJ7	8-J	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIR KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C80	10	450	A20148	PR8450/10		BH1045A		TVA-1705	Filter
C81	4	50	A20149	PR8150/4		BH350		TVA-1303	Stabilizing Cap.
C82	47	500	A190-115	1468-00005	D6-470	5W5Q5	GP3K-470	1FM-45	FM RF Coupling
C83	470	500	A190-130	1468-0005	D6-471	5W5T5	GP3K-471	1FM-35	AM RF Coupling
C84	220	500	A190-131	1468-00035	D6-221	5W5T25	GP3K-221	1FM-325	AVC Filter
C85	5000		A19-167	S15000	D6-502	1D5D5	GP3-333-502	5HK-D5	Osc. Plate Decoupling
C86	47	500	A190-115	1469-00005	TC2-47	5R5Q5	NP01-470	MS-45	Osc. Grid Cap.
C87	10	500	A555-201	1469-00001	TC2-10	5R1Q1	NP0K-100	MS-41	Fixed Trimmer
C88	5000		A19109	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Conv Cathode
C89A	4000			BPD-EXD04	D6-402	1D5D4	823-004	5HK-XD4	Conv. Fil. ¶
B	4000				D6-402	1D5D4			Fil. Bypass ¶
C90A	4000			BPD-EXD04	D6-402	1D5D4	823-004	5HK-XD4	RF Bypass ¶
B	4000				D6-402	1D5D4			AVC Filter ¶
C91	05	400	A194-112	P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass
C92	22		A19165	S22	D6-220	5W5x25	GP3K-220	5GA-Q22	IF Coupling
C93	5000		A19109	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. IF Amp. Screen
C94A	4000			BPD-EXD04	D6-402	1D5D4	823-004	5HK-XD4	RF Bypass ¶
B	4000				D6-402	1D5D4			2nd. FM IF Amp. Plate ¶
C95	.02	400	A194-108	P488-03	DF-303	PTE4S3		4TM-S3	1st. IF Amp. Plate
C96	33	500	A19-110	S133	D6-330		GP3K-330	5GA-Q33	FM IF Coupling
C97A	4000			BPD-EXD04	D6-402	1D5D4	823-004	5HK-XD4	2nd. FM IF Amp. Screen ¶
B	4000				D6-402	1D5D4			2nd. FM IF Amp. Cathode ¶
C98	330	500	A190-135	1468-00035	D6-331		GP3K-331	1FM-335	RF Bypass
C99	5000		A19109	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C100	330	500	A190-135	1468-00035	D6-331		GP3K-331	1FM-335	RF Bypass
C101	.005	800		P488-005	D6-502	PTE6D5	GP2-333-502	6TM-D6	De-emphasis ††
C102	47	500	A190-115	1468-00005	D6-470	5W5q5	GP3K-470	1FM-45	Diode RF Filter
C103	47	500	A190-115	1468-00005	D6-470	5W5q5	GP3K-470	1FM-45	Diode RF Filter
C104	.01	800	A194-107	P488-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C105	.05	800	A194-113	P488-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C106	5000		A19106	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Fil. Bypass
C107	220	500	A190-131	1468-00035	D6-221	5W5T25	GP3K-221	1FM-325	AF Amp. Plate
C108	.01	400	A194-107	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C109	.05	400	A194-113	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling

¶ Some models use 5000MMF. in this application. (Part # A1961)
†† Some models use .002MFD. in this application. (Part # A194-98)

AIR KING MODEL 17K1C (Ch. 700.110, 700.130)

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	AIR KING PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R87A	500KΩ	½	A24117	Q13-133	AG-60-Z	B-60	Volume Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R87A per instructions
R88A	250KΩ	½	A2529	Q13-130	AG-55-S	B-51	Tone Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R88A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIR KING PART No.	IRC PART No.	
R89	1Meg	½	A230-2321	BTS-1Meg	AVC Network
R90	1500Ω	½	A230-2253	BTS-1500	Converter Cathode
R91	22KΩ	½		BTS-22K	Osc. Grid - See Note 8
R92	3300Ω	1		BTA-3300	Osc. Plate - See Note 10
R93	1000Ω	½	A231-2249	BTS-1000	Decoupling
R94	470KΩ	½	A230-2313	BTS-470K	1st. FM-AM IF Amp. Grid
R95	82Ω	½	A230-1123	BTS-82	1st. FM-AM IF Amp. Cathode
R96	22KΩ	1	A232-2281	BTA-22K	1st. FM-AM IF Amp. Screen
R97	1000Ω	½	A231-2249	BTS-1000	1st. FM-AM IF Amp. Plate Decoupling
R98	220KΩ	½	A231-2305	BTS-220K	2nd. FM IF Amp. Grid
R99	68Ω	½	A230-1221		2nd. FM IF Amp. Cathode
R100	15KΩ	1	A232-1177	BTA-15K	2nd. FM IF Amp. Screen - See Note 9
R101	2200Ω	1	A232-2257	BTA-2200	2nd. FM IF Amp. Plate Decoupling
R102	30KΩ	½	A230-84		Ratio Detector Diode Load
R103	1Meg	½	A230-2321	BTS-1Meg	Ratio Detector Diode Load
R104	27KΩ	½	A230-1183	BTS-27K	De-emphasis
R105	47KΩ	½	A230-89	BTS-47K	AVC Filter
R106	470KΩ	½	A230-2313	BTS-470K	AVC Diode Load
R107	2.2Meg	½	A230-2329	BTS-2.2Meg	AVC Network
R108	10Meg	½	A230-2345	BTS-10Meg	AF Amp. Grid
R109	470KΩ	½	A231-2313	BTS-470K	AF Amp. Plate
R110	2500Ω	10		1 3/4A-2500	Decoupling - Wire Wound
R111	470KΩ	½	A231-2313	BTS-470K	Series Phono

Note 8 Some models use 10KΩ resistor in this application.
Note 9 Some models use 18KΩ resistor in this application.
Note 10 Some models use 20Ω resistor in this application.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	AIR KING PART No.		IRC PART No.	
L26	AM Loop Ant.	.8Ω		A62298			Tap .1Ω
L27	FM Ant. Coil	0Ω		A28288			
L28	Fil. Choke	.1Ω		A28283			
L29	RF Choke	.1Ω		A28283			
L30	AM Osc. Coil	1.8Ω		A28285			Tap .4Ω
L31	FM Osc. Coil	0Ω		A28287			
L32	1st. FM IF	.9Ω	.8Ω	A3395			
L33	1st. AM IF	20Ω	20Ω	A3396			Tap on Pri. 8.5Ω
L34	2nd. FM IF	.6Ω		A3394			
L35	2nd. AM IF	16Ω	16Ω	A3399			
L36	Ratio Det. Trans.	1.8Ω	1Ω	A3397			Tap .9Ω

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	AIR KING PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M3		LT-5AG	D-AG	W66B	A66U	73	O-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

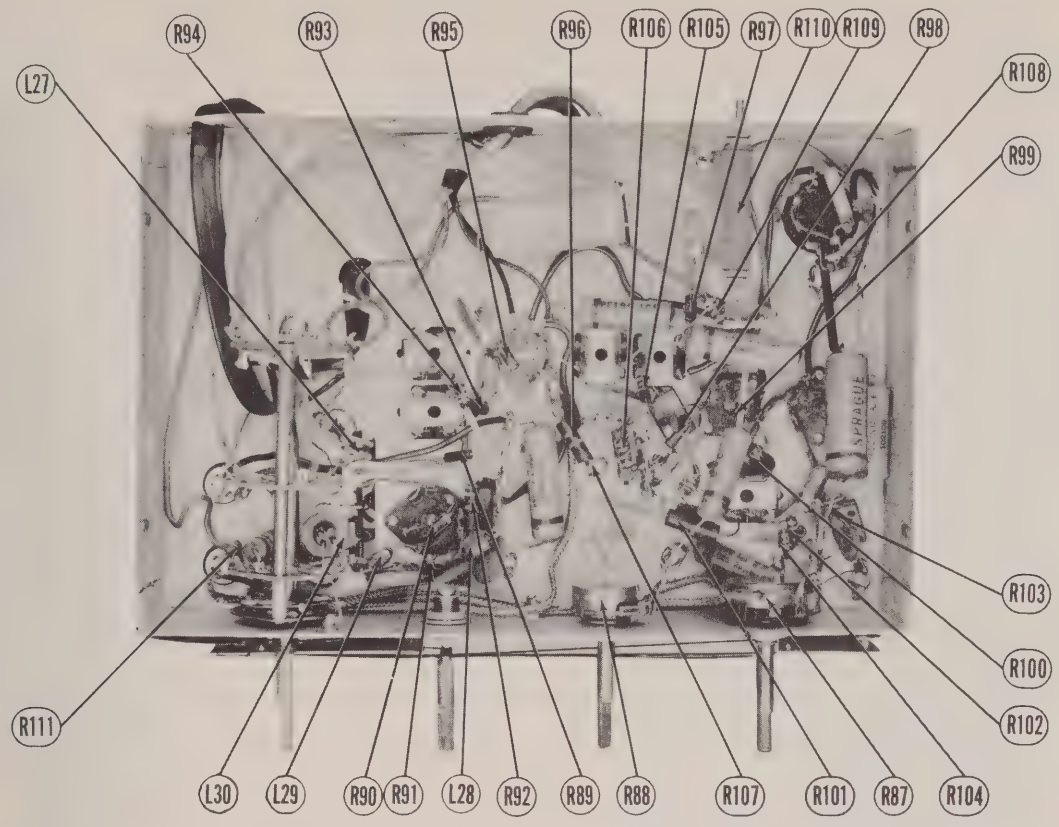
ITEM No.	REPLACEMENT DATA		REMARKS
	AIR KING PART No.	WALCO PART No.	
M4		W-6AGA	

DIAL LIGHTS

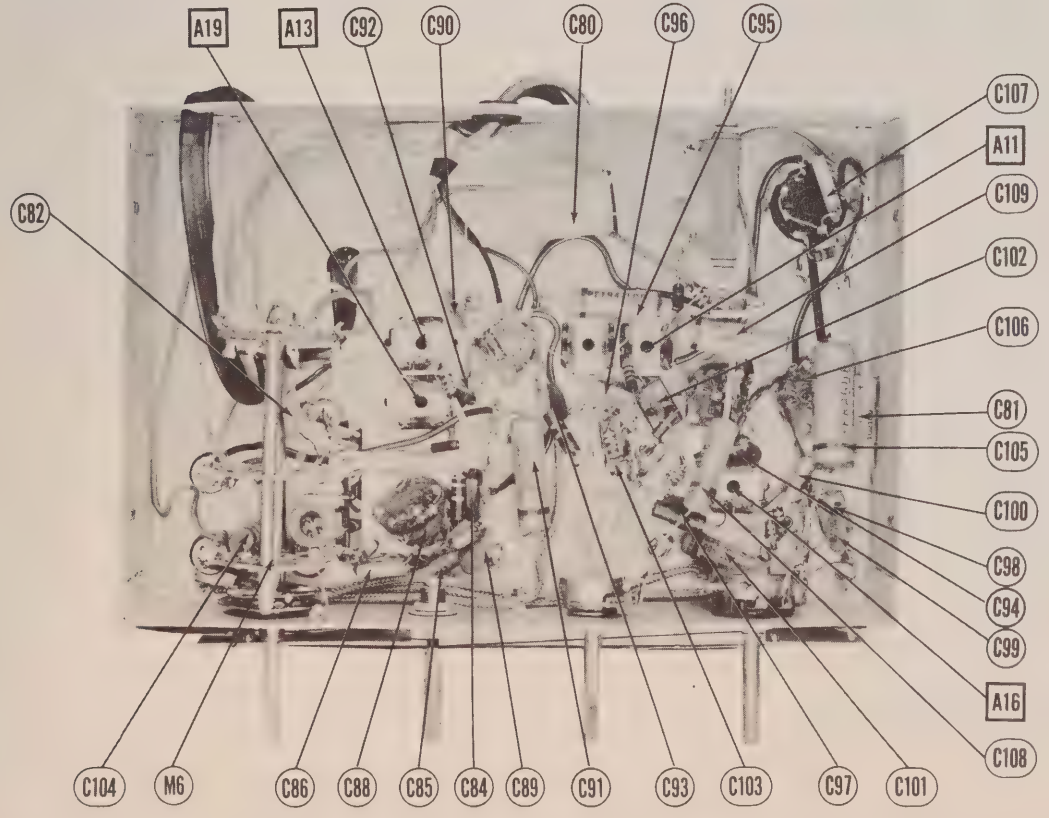
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIR KING PART No.		
M5	Bayonet	6-8	.15	Brown			Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	AIR KING PART No.	NOTES
M6	Switch	A37102	(Function) FM-AM-Phono-T V.
M7	Tuning Cap	A16109	(24-526MMF, 27-208MMF)
A21	Trimmer	A1774	FM Osc.



RADIO CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



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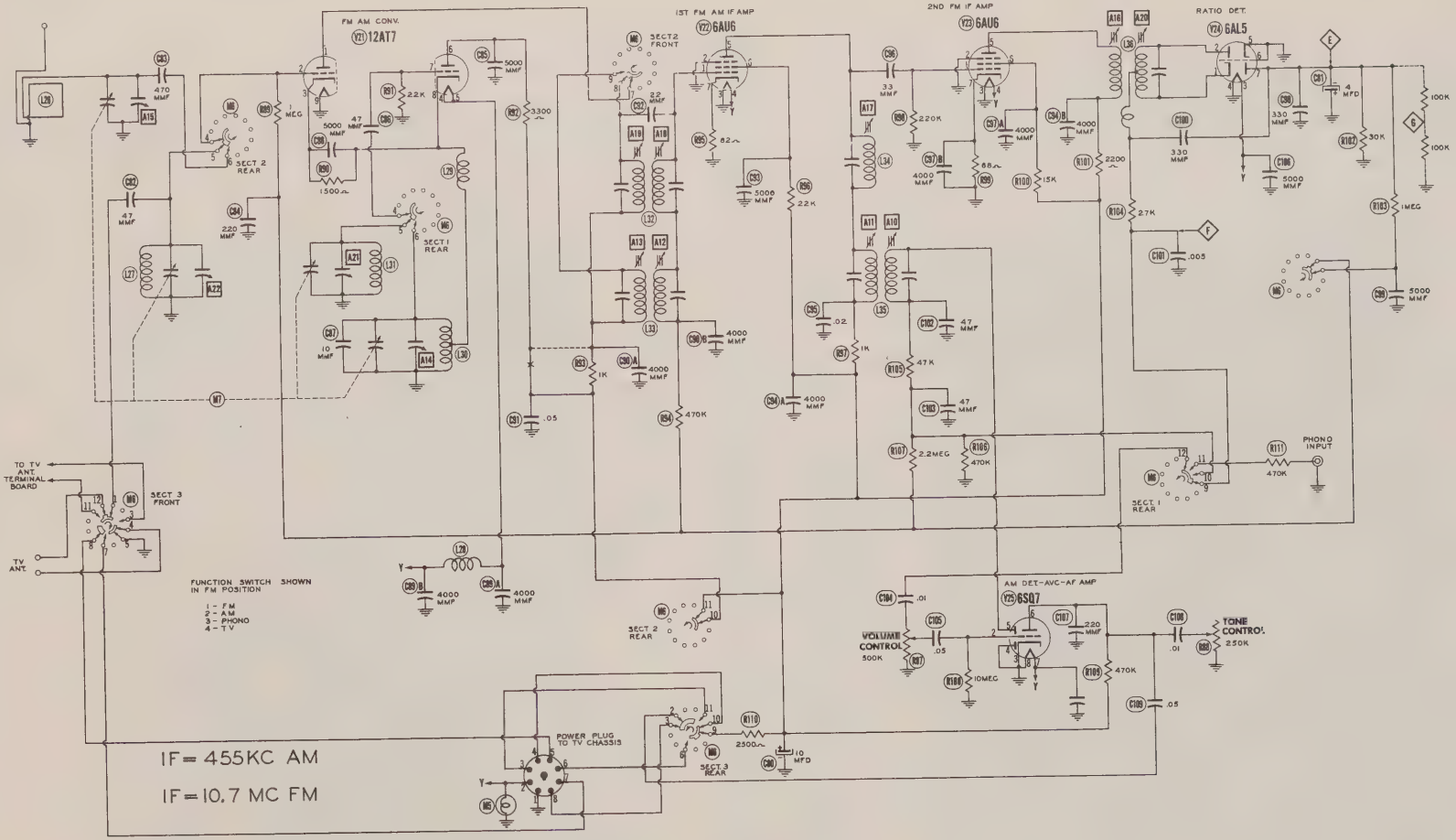

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V21	12AT7	255VDC †-.1VDC	0V	4.1VDC	6VDC	6VDC	230VDC	‡F-.5VDC ‡A-9.6VDC	0V	0V
V22	6AU6	▲0V	0V	0V	6.3VAC	245VDC	175VDC	1.1VDC		
V23	6AU6	0V	0V	0V	6.3VAC	235VDC	180VDC	1.3VDC		
V24	6AL5	-.3VDC	-.3VDC	6.3VAC	0V	0V	0V	-.8VDC		
V25	6SQ7	0V	-.8VDC	0V	0V	-.6VDC	85VDC	6.3VAC	0V	

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V21	12AT7	†3.5KΩ	‡ 3.3Ω ▲3.6Meg	1.5KΩ	.1Ω	.1Ω	†5.8KΩ	22KΩ	.4Ω	0Ω
V22	6AU6	‡1.1Meg ▲3Meg	0Ω	0Ω	.1Ω	†3.5KΩ	†24KΩ	82Ω		
V23	6AU6	220KΩ	0Ω	0Ω	.1Ω	†4.7KΩ	†17KΩ	68Ω		
V24	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	30KΩ		
V25	6SQ7	0Ω	10Meg	0Ω	0Ω	470KΩ	†470KΩ	.1Ω	0Ω	

ALL MEASUREMENTS TAKEN IN FM OR AM POSITIONS
† MEASURED IN FM POSITION
▲ MEASURED IN AM POSITION
† MEASURED FROM PIN 8 OF V19

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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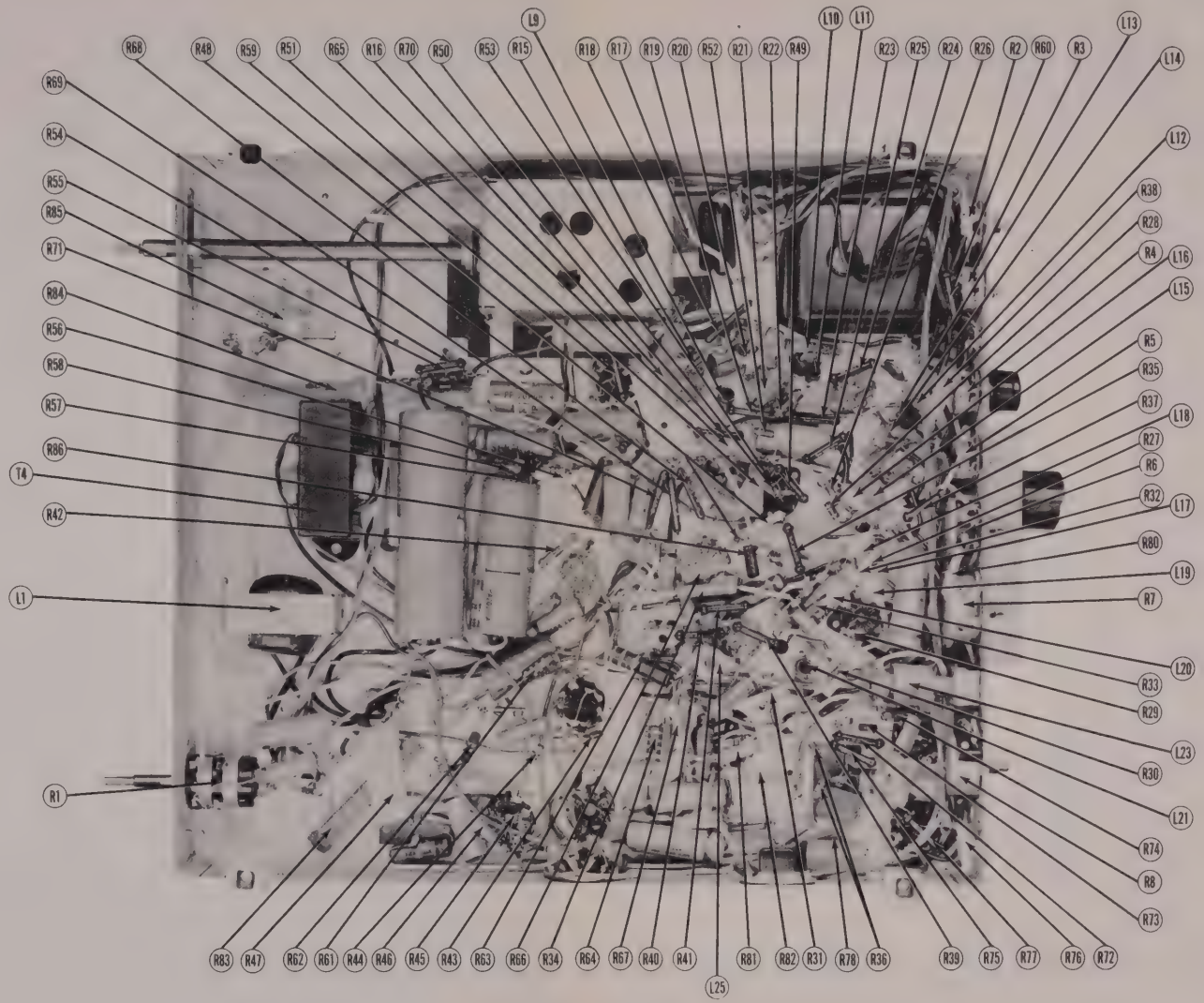
AIR KING MODEL 17K1C (Ch. 700.110, 700.130)

RADIO SCHEMATIC



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

*TRADE MARK

AIRLINE MODELS
05BR-3021B, 05BR-3024B, 05BR-3027A

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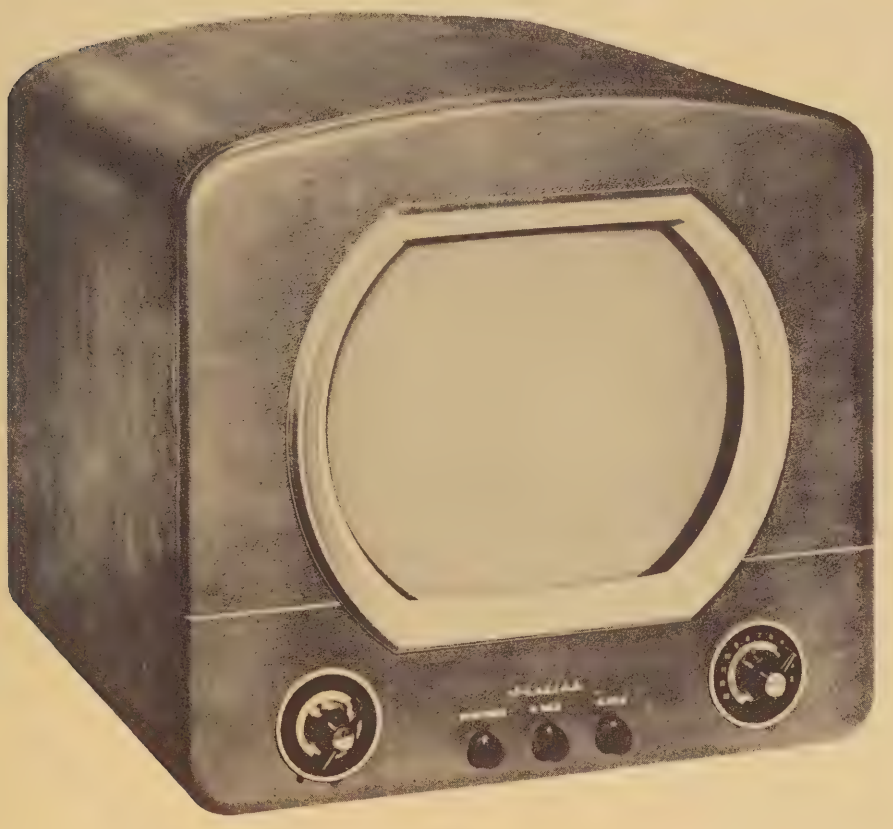

MODEL 05BR-3027A

AIRLINE MODELS
05BR-3021B, 05BR-3024B, 05BR-3027A

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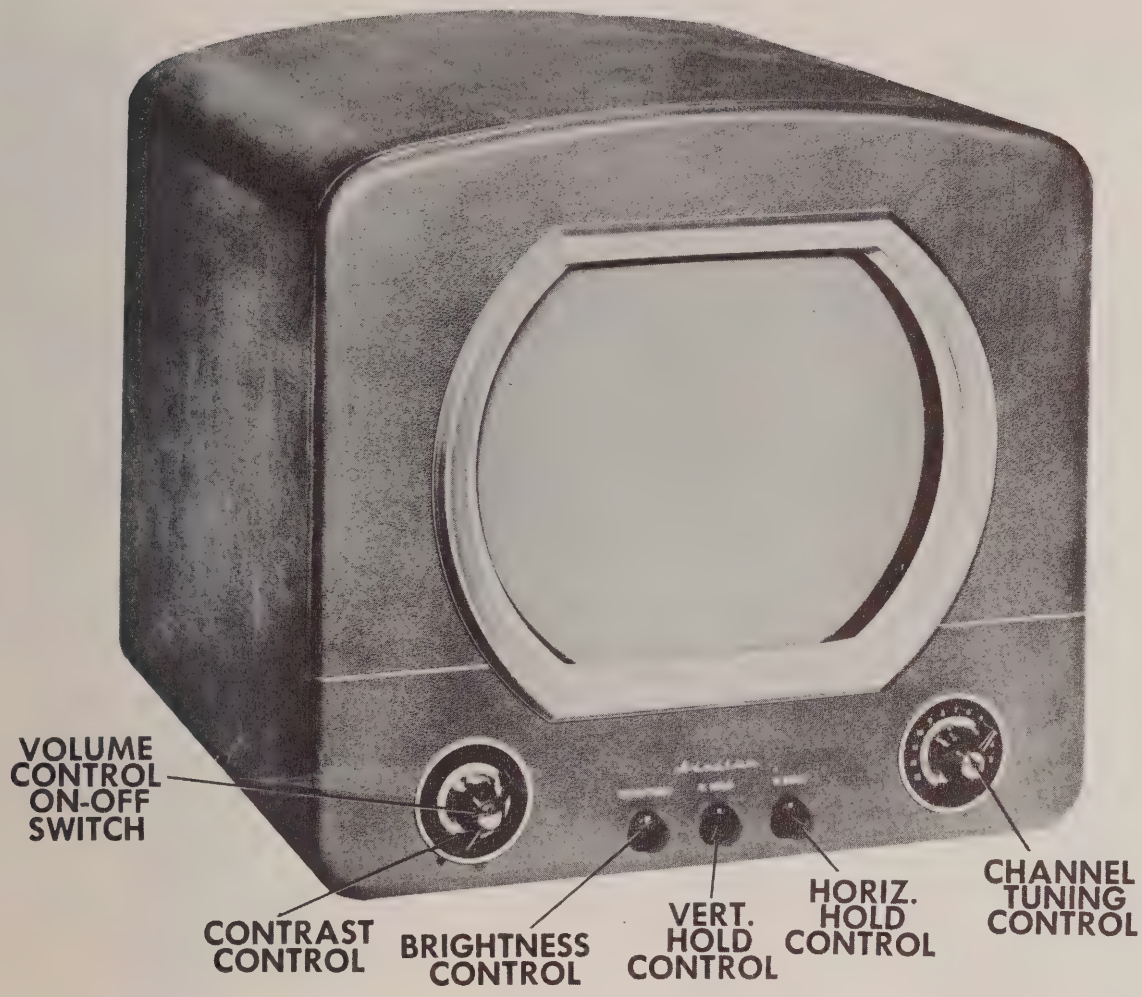
*TRADE MARK

AIRLINE MODELS
05BR-3021B, 05BR-3024B, 05BR-3027A



AIRLINE MODELS
05BR-3021B, 05BR-3024B, 05BR-3027A

AIRLINE MODEL 05BR-3027A

TRADE NAME	Airline, Models 05BR-3021B, 05BR-3024B, 05BR-3027A
SUPPLIER	Montgomery Ward Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty One

POWER SUPPLY 110-115 Volts AC-60 Cycle — RATING 1.8 Amp. @ 115 Volts AC
TUNING RANGE—Channels 2 Thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 10
Horizontal Sweep Circuit Adjustments 10
Parts List and Description 12, 13, 15
Photographs
Cabinet - Rear View 10
Capacitor and Alignment Identification 4, 9
Photographs (cont.)
Chassis - Top View 3
RF Tuner 7
Resistor and Inductor Identification 11, 14
Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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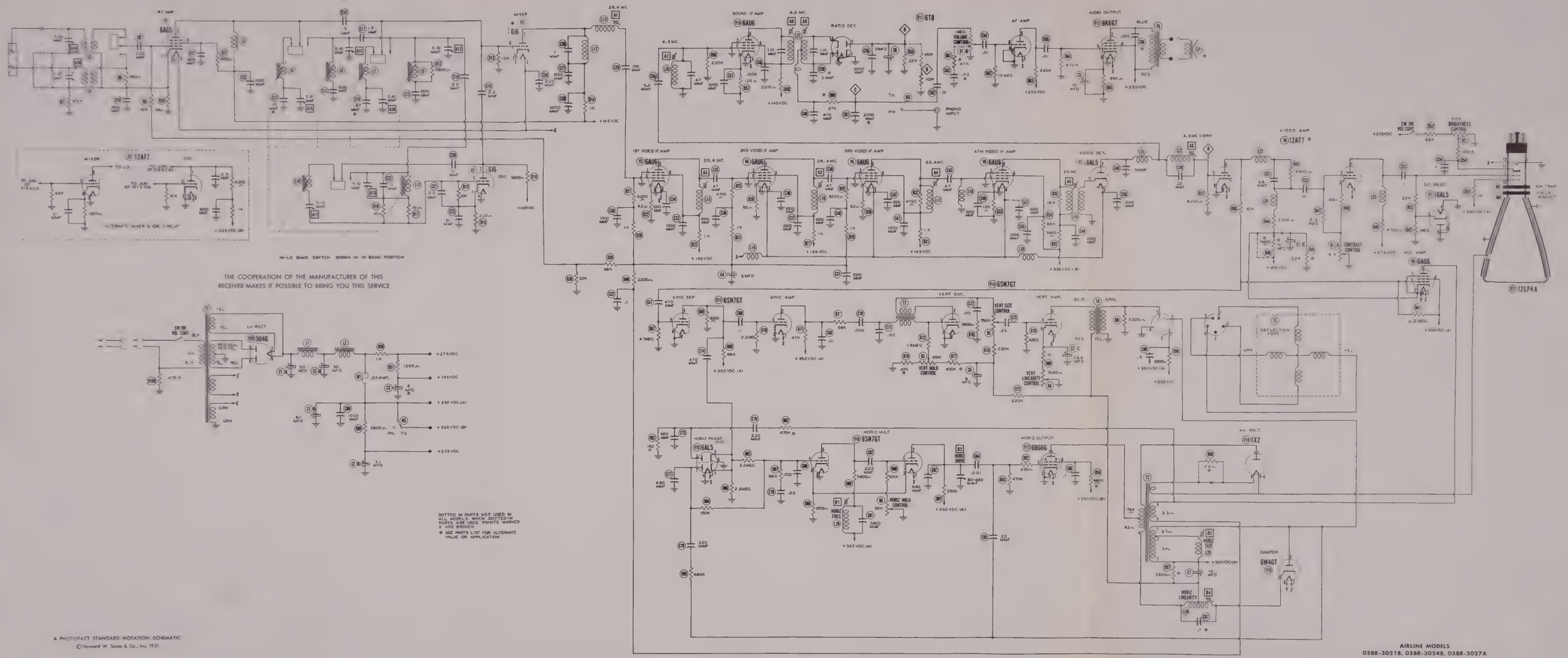

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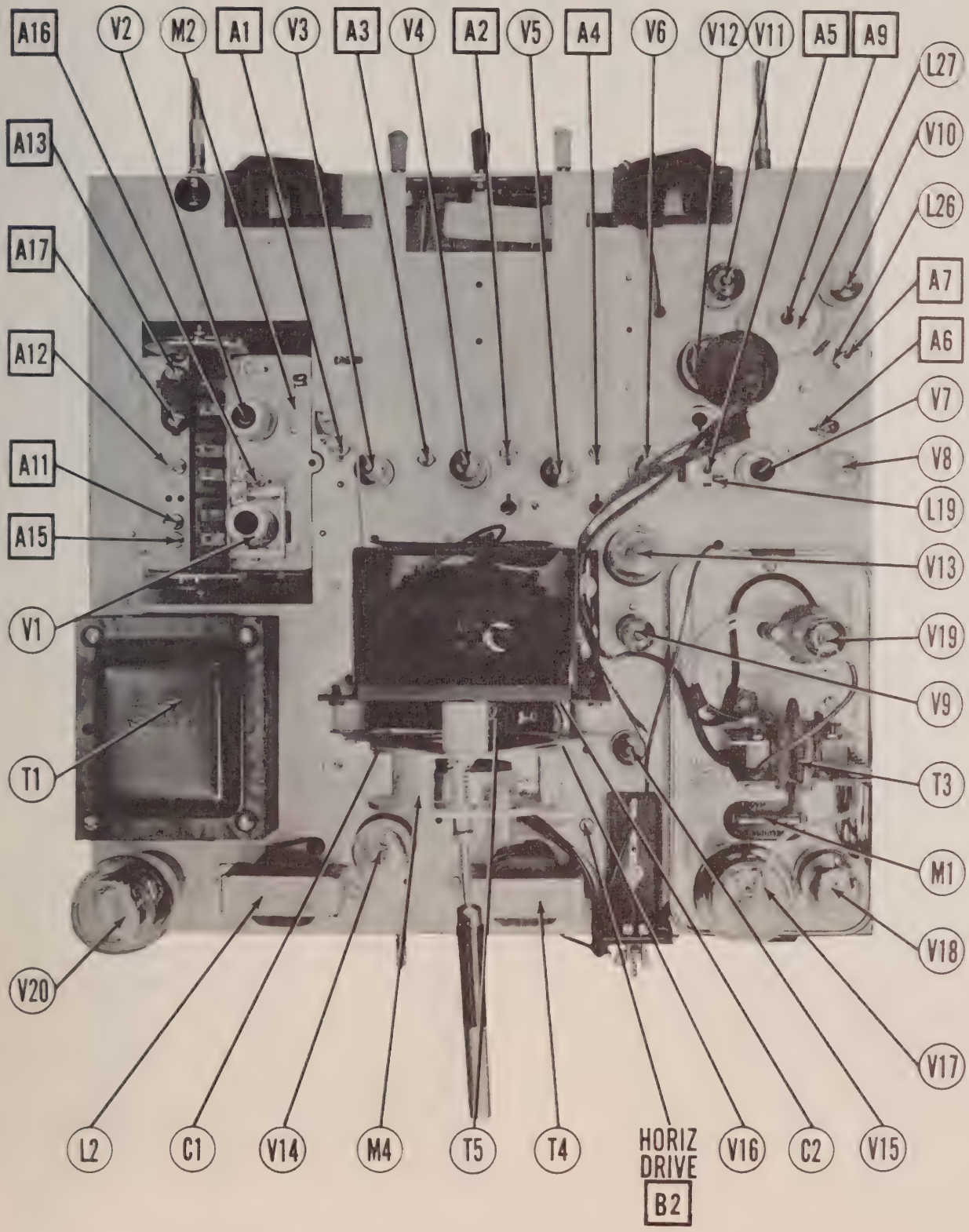
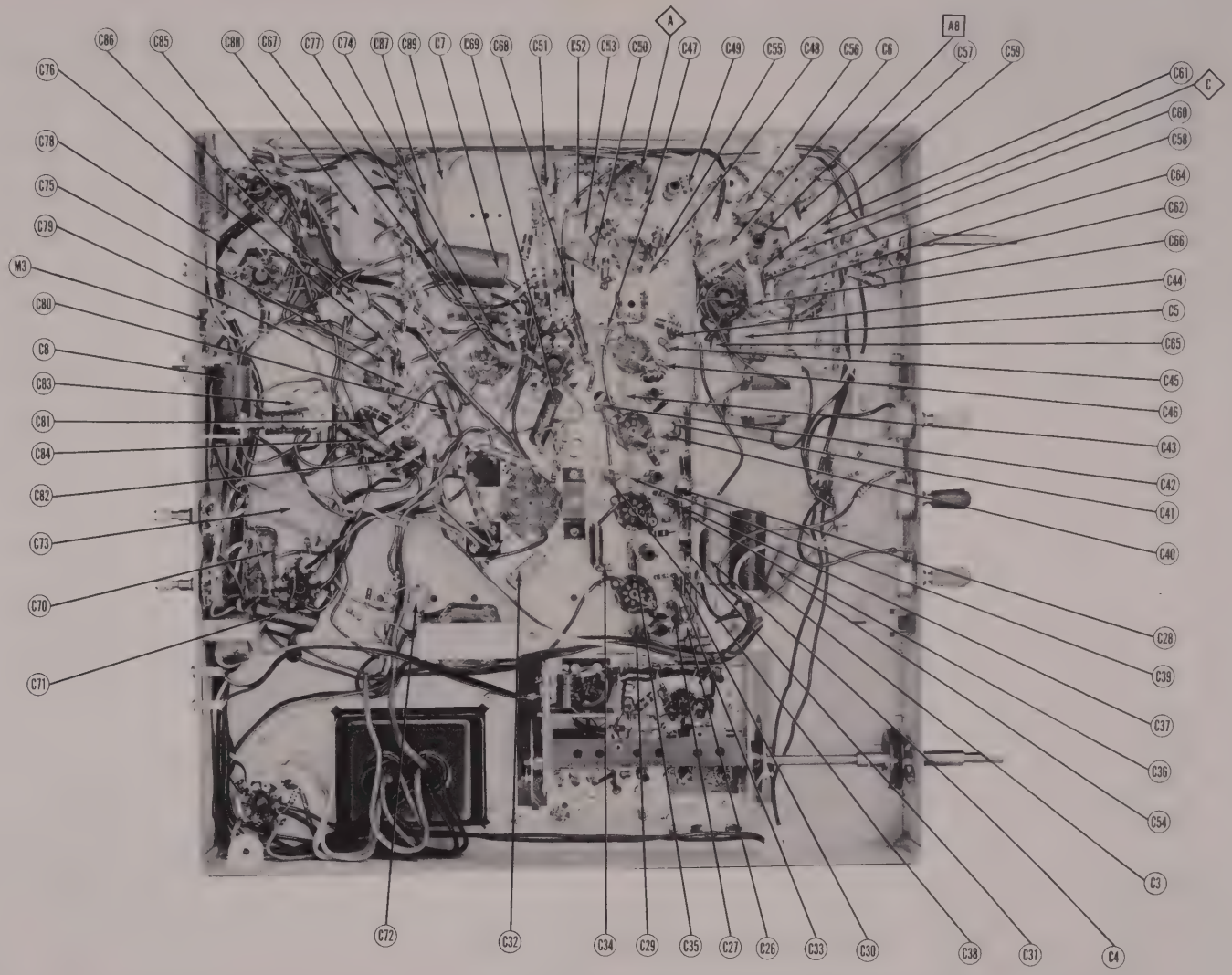
AIRLINE MODELS
05BR-3021B, 05BR-3024B, 05BR-3027A

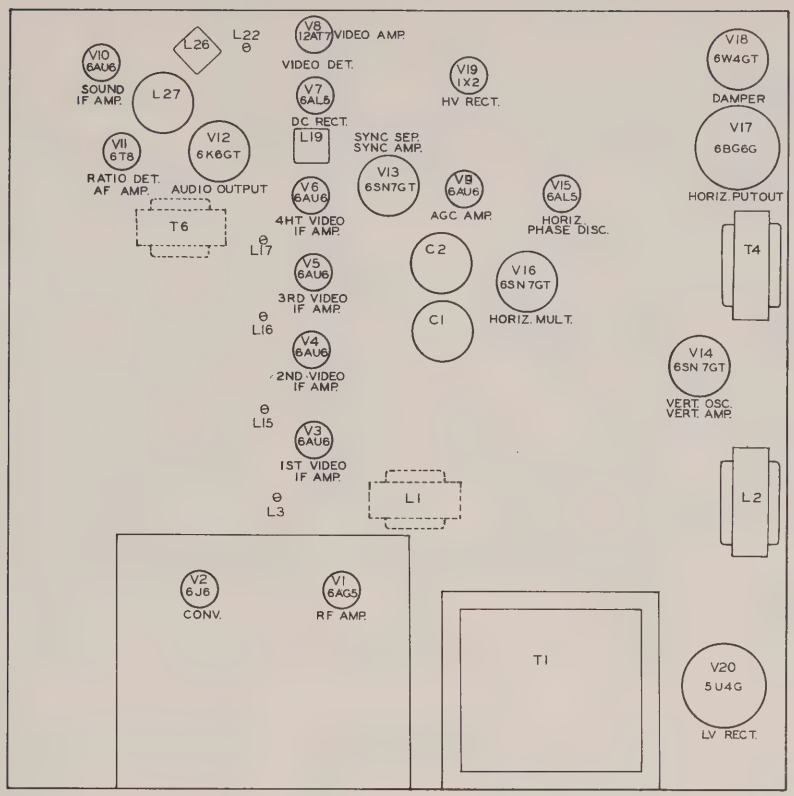
AIRLINE MODELS
05BR-3021B, 05BR-3024B, 05BR-3027A



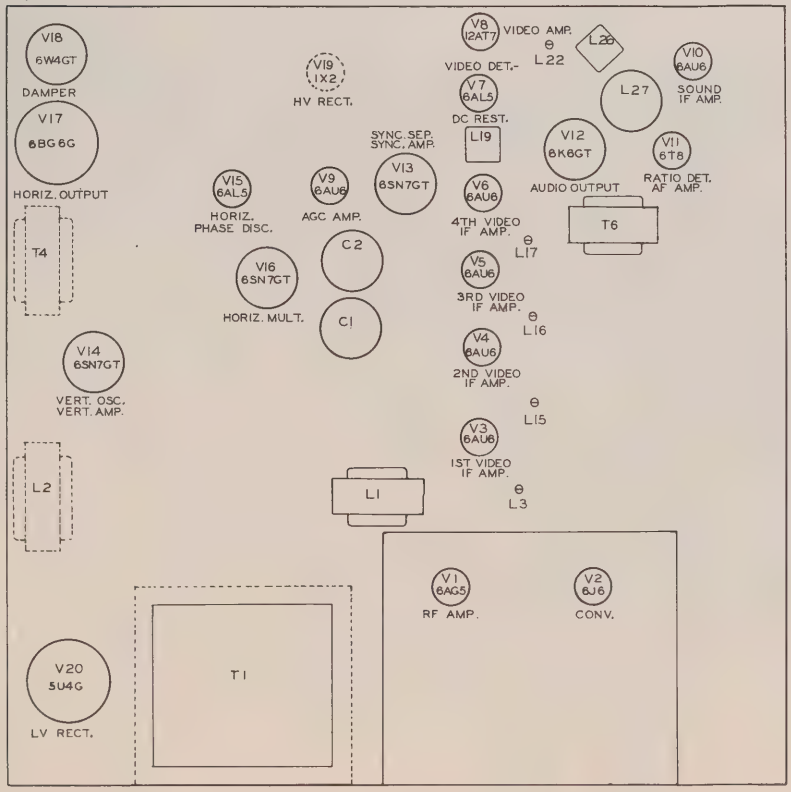
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), from its socket and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Note: In later productions the 6J6, converter, has been replaced with a 12AT7. In that event use a 12AT7 with pin 1 removed.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis	26.4MC	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal gen. to maintain 1 volt reading.
2.	"	"	23.4MC	"	"	A3, A4	"
3.	"	"	25MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis	24MC (10MC SWP)	23MC 26.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD.	High side to pin 1 (cathode of 6AL5, (V7). Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. Amp. to pin 2 of picture tube. Low side to chassis.	A6	Adjust for MINIMUM 400% indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point B to B-. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (C). Common to Point (D).	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1 (cathode) of 6AL5, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizor capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A9	Reconnect capacitor C6. Adjust A9 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Remove the dummy converter tube and replace the original tube in its socket.
Pre-set the trimmer screws as shown in figure 5.
With the switch is low band position, turn the tuner core carriage to the extreme top of its travel.
Check to see that the cores project 1.6ins. out of the coils, then turn the low band oscillator core on additional four turns out of the coil, (counter-clockwise).

LOW BAND ALIGNMENT

Move carriage bar down 7/64 inch, from extreme top, by turning tuning control clockwise. This is the proper position for channel 6.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6 (see note above)	Vert. Amp. to Point (A). Low side to chassis.	A10, A11, A12	Adjust for maximum response with symmetrical peaks.
9.	"	"	"	"	"	"	A13	Adjust to place video marker at 50% on response curve as shown in fig. 4.
10.	"	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"		Turn the tuning control until the video marker appears at 50% on the response curve for each of the low band channels, and check for proper response curve. If necessary retouch A11 and A12 for compromise adjustment which will give best response over the low band channels.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

HIGH BAND ALIGNMENT

Move the carriage bar down 7/64 inch, from extreme top, by turning tuning control counter-clockwise. This is the proper position for channel 13.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13 (see note above)	Vert. Amp. to Point (A) Low side to chassis.	A14, A15, A16	Adjust for maximum amplitude of response with symmetrical peaks.
12.	"	"	"	"	"	"	A17	Adjust to place video marker at 50% on response curve as shown in fig. 4.
13.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Turn tuning control to place video marker at 50% for each of the high band channels, and check for proper response curve. If necessary retouch A15 and A16 for compromise adjustment which will give the best response over the high band channels.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			

ALIGNMENT INSTRUCTIONS (CONT.)

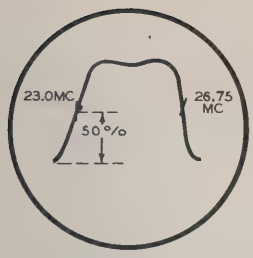


FIG. 1

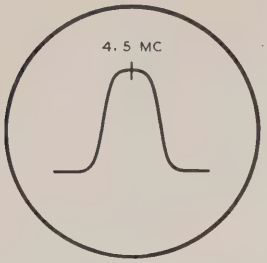


FIG. 2

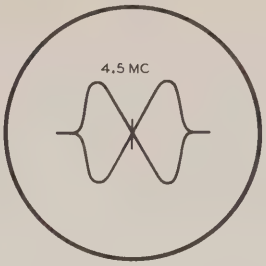


FIG. 3

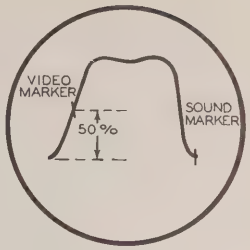


FIG. 4

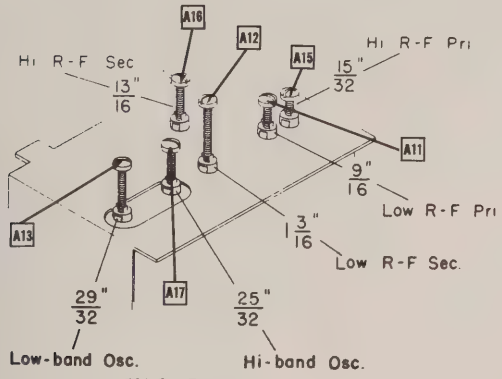
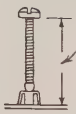
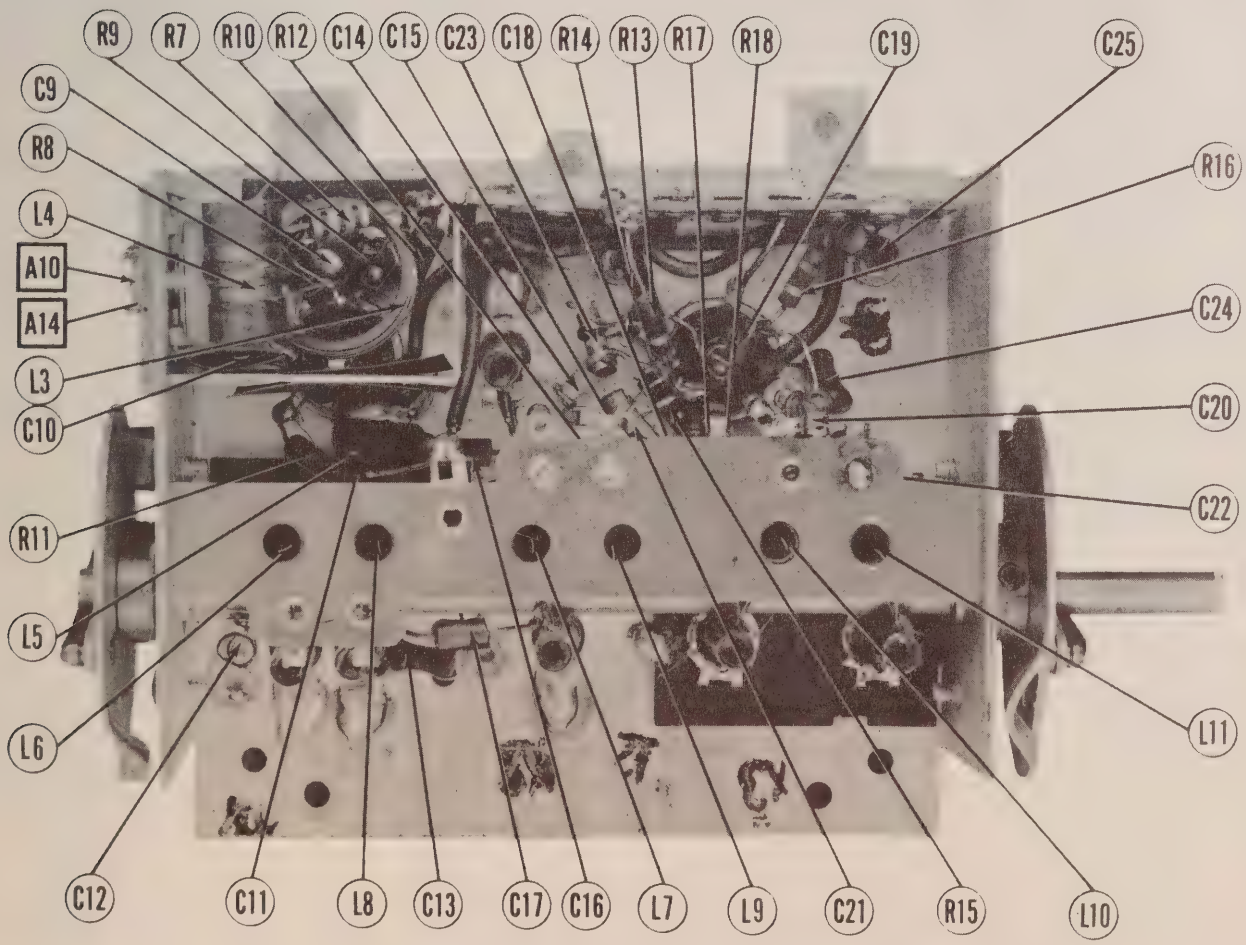


FIG. 5

ALIGNING TRIMMERS



The dimensions shown are approx from the shoulder of screw head to mounting base



RF TUNER - BOTTOM VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.1VDC	.6VDC	6.3VAC	0V	145VDC	145VDC	.6VDC		
V 2	6J6	160VDC	100VDC	6.3VAC	0V	§-.8VDC	0V	3VDC		
V 3	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.9VDC		
V 4	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.9VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	138VDC	138VDC	.9VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	290VDC	140VDC	1.2VDC		
V 7	6AL5	0V	0V	6.3VAC	0V	.9VDC	0V	-2.2VDC		
V 8	12AT7	200VDC	0V	39VDC 1VDC	6.3VAC	6.3VAC	83VDC	-.3VDC	0V	0V
V 9	6AU6	85VDC	100VDC	■100VDC	■100VDC	0V	330VDC	100VDC		
V 10	6AU6	0V	0V	0V	6.3VAC	125VDC	125VDC	1VDC		
V 11	6T8	-.2VDC	-.3VDC	-.2VDC	0V	6.3VAC	0V	0V	-.3VDC	83VDC
V 12	6K6GT	0V	0V	250VDC	255VDC	0V	0V	6.3VAC	18VDC	
V 13	6SN7GT	-.2VDC	85VDC	0V	-1VDC	35VDC	0V	6.3VAC	0V	
V 14	6SN7GT	-7.3VDC	112VDC	0V	0V	430VDC	14VDC 22VDC	6.3VAC	0V	
V 15	6AL5	2.8VDC	-.2VDC	6.3VAC	0V	2.8VDC	0V	-.2VDC		
V 16	6SN7GT	-1.6VDC	125VDC	11VDC	-.2VDC	290VDC	11VDC	6.3VAC	0V	
V 17	6BG6G	-.2VDC	0V	0V	310VDC	-14VDC	-14VDC	6.3VAC	250VDC	Top Cap *
V 18	6W4GT	330VDC	0V	445VDC	0V	330VDC	0V	■100VDC	■100VDC	
V 19	1X2	*	DO NOT MEASURE							
V 20	5U4G	0V	350VDC	0V	340VAC	0V	340VAC	330VDC	350VDC	
V 21	12LP4A	0V	6VDC	PIN 10 340VDC	PIN 11 95VDC	PIN 12 6.3VAC				

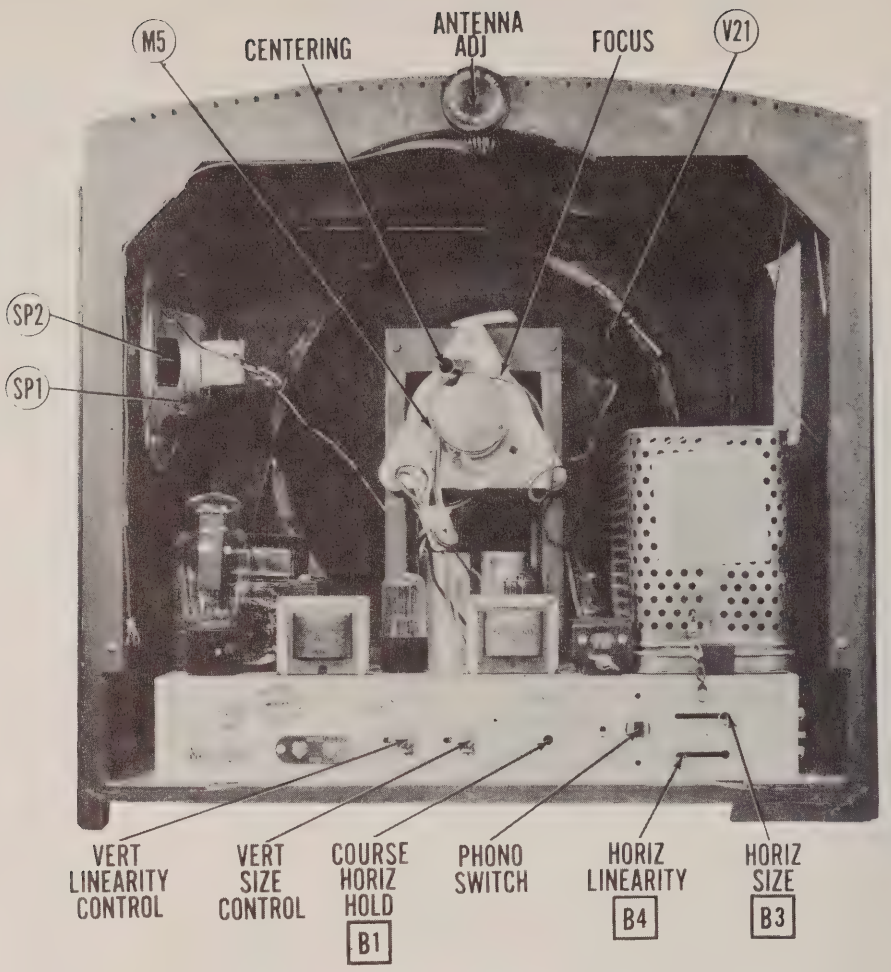
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
* DO NOT MEASURE
■ 6.3 VAC MEASURED ACROSS FILAMENTS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	45KΩ	68Ω	.1Ω	0Ω	†2.4KΩ	†3.4KΩ	68Ω		
V 2	6J6	†3.2KΩ	†9KΩ	.1Ω	0Ω	10KΩ	10KΩ	220Ω		
V 3	6AU6	80KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 4	6AU6	75KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 5	6AU6	80KΩ	0Ω	0Ω	.1Ω	†3.6KΩ	†3.6KΩ	82Ω		
V 6	6AU6	2Ω	0Ω	0Ω	.1Ω	†5.8KΩ	†68KΩ	120Ω		
V 7	6AL5	1Ω	0Ω	.1Ω	0Ω	1Meg	0Ω	8.2KΩ		
V 8	12AT7	†5.6KΩ	2.2Meg	4.5KΩ	.1Ω	.1Ω	†18KΩ	8.2KΩ	0Ω	0Ω
V 9	6AU6	†30KΩ	†7.5KΩ	¶.1Ω	¶0Ω	70KΩ	†80Ω	†7.5KΩ		
V 10	6AU6	1Ω	0Ω	0Ω	.1Ω	†4:5KΩ	†4.5KΩ	120Ω		
V 11	6T8	Inf.	22KΩ	Inf.	0Ω	.1Ω	0Ω	0Ω	10Meg	†220KΩ
V 12	6K6GT	Inf.	0Ω	†3.2KΩ	†3.2KΩ	470KΩ	Inf.	.1Ω	680Ω	
V 13	6SN7GT	2.2Meg	†47KΩ	0Ω	4.7Meg	†20KΩ	0Ω	.1Ω	0Ω	
V 14	6SN7GT	1.5Meg	▲1Meg	0Ω	1Meg	▲100Ω	6KΩ 1KΩ	.1Ω	0Ω	
V 15	6AL5	2.2Meg	150KΩ	.1Ω	0Ω	2.2Meg	0Ω	4.5Meg		
V 16	6SN7GT	100KΩ	†220KΩ	1.5KΩ	4.5Meg	†5.6KΩ	1.5KΩ	.1Ω	0Ω	
V 17	6BG6G	4.5Meg	0Ω	0Ω	680KΩ	470KΩ	470KΩ	.1Ω	†6.8KΩ	Top Cap ▲88Ω
V 18	6W4GT	†80Ω	Inf.	200KΩ	Inf.	†80Ω	70KΩ	¶.1Ω	¶0Ω	
V 19	1X2	ALL PINS ARE INF. RESISTANCE								Top Cap 850Ω
V 20	5U4G	Inf.	20KΩ	500KΩ	32Ω	500KΩ	3lΩ	20KΩ	20KΩ	
V 21	12LP4A	0Ω	1Meg	PIN 10 1.2KΩ	PIN 11 150KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V20
▲ MEASURED FROM PIN 3 OF V18
¶ MEASURED FROM JUNCTION OF R44 AND R45.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV staion, preferably a test pattern.

Turn the horizontal hold, "fine", (front panel), to the mid-position of its range.

Adjust the horizontal hold control, "coarse" slug, (B1), (rear of chassis), to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise until a fold over, (bright vertical line) appears in the picture, Then turn the trimmer clockwise until the fold over disappears and then one half turn additional.

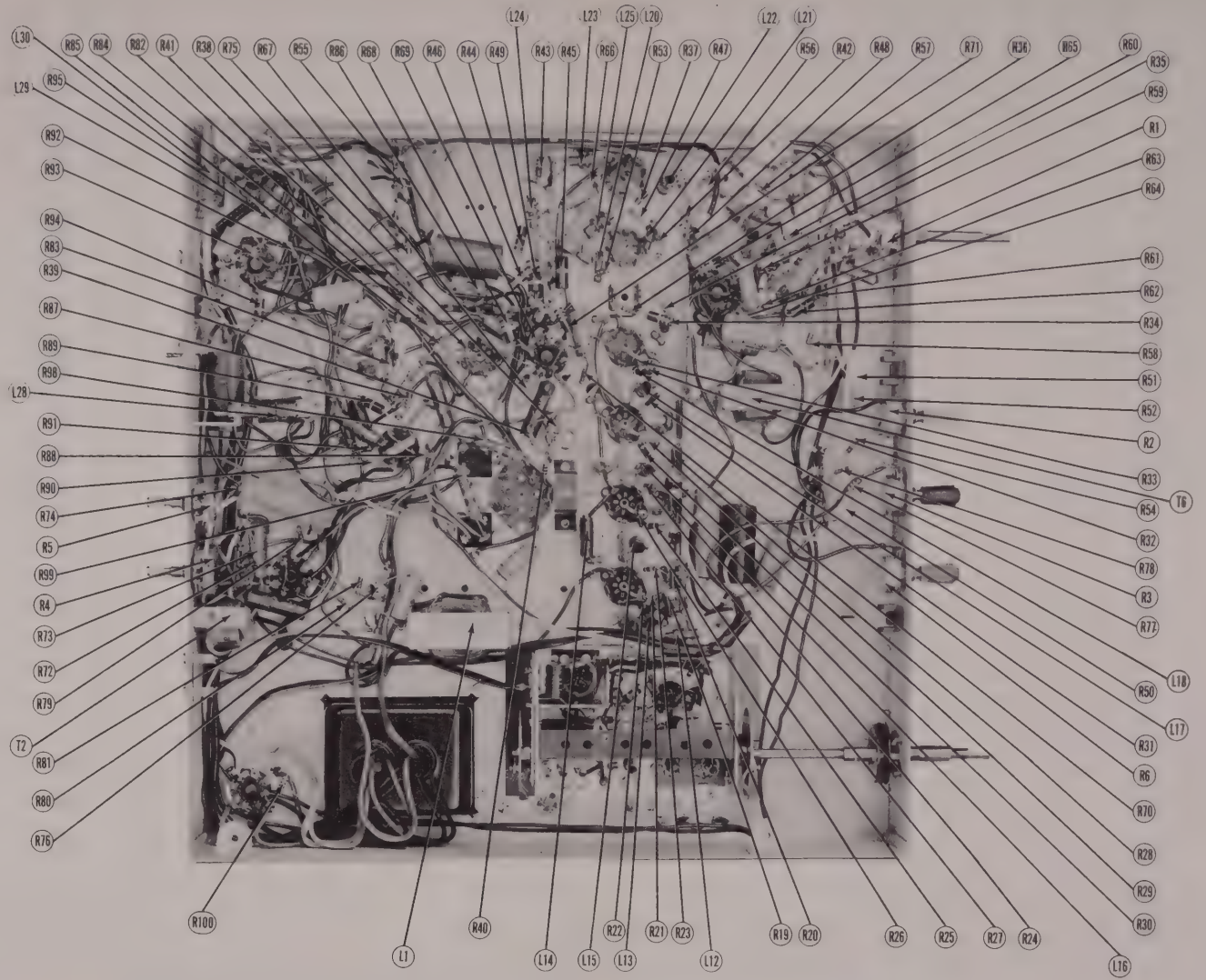
Adjust the horizontal size slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right. Slight readjustment of B2 may be necessary for optimum linearity.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs and channel pointer.
2. Remove four wood screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna,
4. Disconnect speaker.
5. Remove five metal screws from chassis. Remove chassis.
6. Remove two 5/10" hex nuts from speaker. Remove speaker.

NOTE: - FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6AG5	6AG5	7BD	
V2A	Converter	6J8	6J8	7BF	
B	Converter	12AT7	12AT7	9A	
V3	1st Video IF Amp	6AU6	6AU6	7BK	
V4	2nd Video IF Amp	6AU6	6AU6	7BK	
V5	3rd Video IF Amp	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V8A	Video Amplifier	12AT7	12AT7	9A	
B	Video Amplifier	12AU7	12AU7	9A	
V9	AGC Amplifier	6AU6	6AU6	7BK	
V10	Sound IF Amplifier	6AU6	6AU6	7BK	
V11	Ratio Detector AF Amplifier	6T8	6T8	9E	
V12	Audio Output	6K6GT	6K6GT	7S	
V13	Sync Separator-Sync Amplifier	6SN7GT	6SN7GT	8BD	
V14	Vert Amplifier-Vert Oscillator	6SN7GT	6SN7GT	8BD	
V15	Horiz Phase Discr	6AL5	6AL5	6BT	
V16	Horiz Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz Output	6BG6G	6BG6G	5BT	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1X2	1X2	7CB	
V20	LV Rectifier	5U4G	4U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: THOMAS PART No.	RMA BASE TYPE	NOTES
V 21	13LP4A	12LP4A	12LP4A ①		① Use single magnet ion trap.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450	A-BC-17845	AFH3686F		UPT38145		TVL-3790	▪ Filter
B	60	450							▪ Filter
C	10	450							▲ Decoupling
C2A	30	450	A-BC-18487	AF644J		UPT409		TVL-3741	▲ Filter
B	30	450		PR825/100				TVA-1207	● Audio Output Dec.
C	135	25							▲ Vert. Amp. Cathode
C3	5	450	A-BC-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C4	5	50	A-BC-11751	PRS150/4		BR550		TVA-1303	AGC Filter
C5	10	50	A-BC-17183	PR550/10		BR105		TVA-1304	Audio Output cathode
C6	10	50	A-BC-17183	PR550/10		BR105		TVA-1304	Stabilizing Cap.
C7	10	150	A-BC-11495	PRS150/12		[illegible]		TVA-1406	Decoupling
C8	8	450	A-BC-13453	PRS450/8		BR845A		TVA-1704	Decoupling
C9	320		A-BC-6045	SU20	D6-221		GP2K-221	5GA-Q45	RF Coupling
C10	5000		A-BG-13982	BPD-005	DD-502		81J-005	5HK-D5	RF Amp. Cathode
C11	1000		C-BG-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Screen
C12	15				TCZ-15		NP0K-150	5TCC-Q15	Fixed Trimmer †
C13	1000		C-BG-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C14	4.7			SH.7NP0	TCZ-4.7		NP0K-4R7		Fixed Trimmer #
C15	1000		C-BG-13201	SI1000	D6-102		GP2L-102	5HK-D1	RF Bypass
C16	.5		A-BG-12495-7		TCZ-.5		NP0K-0R5		RF Coupling
C17	1.5			SII. 5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C18	2.2		A-BG-12495-4		TCZ-2.2		NP0K-2R2		Osc. Coupling
C19	2.2		A-BG-12495-4		TCZ-2.2		NP0K-2R2		Osc. Coupling
C20	51		A-BG-11891		TCN-51		N750K-510		Osc. Feedback
C21	2.5		C-BG-15737						Osc. Grid Cap.
C23	7		C-BG-15224	SI6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C24	51		A-BG-11891	SI51	TCN-51		GP1K-510	5GA-Q5	Mixer Cathode
C25	220		C-BG-6045	SU220	D6-221		GP2K-220	5GA-T22	Conv. Fil.
C26	1000		C-BG-13201	[illegible]	D6-102		GP2L-102	5HK-D1	RF Bypass
C28	7		C-BG-15224	SI6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C29	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	Conv. Plate Dec.
C30	5000		A-BG-13982	BPD-005	DD-502	1D5D5	81J-005	5HK-D5	RF Bypass
C39	100	500	C-BF3-8	1468-0001	D6-101	1W5T1	GP1K-101	1FM-31	IF Coupling
C31	1000		C-BG-13201	[illegible]	D6-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C32	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C33	.1	200	C-BD-10770	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C34	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	Int. Video IF Dec.
C34	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	Int. Video IF Fil.
C35	47	500	C-BF3-109	1469-00005	D6-470	5R5Q5	GP1K-470	MS-45	IF Coupling
C36	1000		C-BG-13201	[illegible]	D6-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C37	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	2nd. Video IF Dec.
C38	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	2nd. Video IF Fil.
C39	47	500	C-BF3-109	1468-00005	D6-470	5R5Q5	GP1K-470	MS-45	IF Coupling
C40	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C41	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	3rd. Video IF Dec.
C42	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	3rd. Video IF Fil.
C43	47	500	C-BF3-109	1468-00005	D6-470	5R5Q5	GP1K-470	MS-45	IF Coupling
C44	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	4th. Video IF Plate
C45	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	4th. Video IF Screen
C46	1000		C8G-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	4th. Video IF Cathode
C47	1000		C-BG-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	4th. Video IF Fil.
C48	35		C-BG-12166	SI35NP0			NP0K-350		Video Diode Filter
C49	22				TCZ-22		NP0K-220	5TCC-Q22	Fixed Trimmer
C50	1000		C-6G-13201	SI1000	D6-102	1WSD1	GP2L-102	5HK-D1	Video Det. Fil.
C51	68	500	C-BF3-111	1469-00007	D6-680	5R5Q7	GP1K-680	MS-47	Video Coupling
C52	.01	400	C-BD-10761	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Video Coupling
C53	.1	400	C-BD-10760	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C54	.1	400	C-BD-10760	P488-1	DF-104	PTE4P1		4TM-P1	Picture Tube Cathode
C55	3.3		A-BG-12495-5	SI3.3NP0	TCZ-3.3		NP0K-3R3		Sound IF Coupling
C56	.004	400	C-BD-17958	P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Sound IF Decoupling
C57	5000		A-BG-13982	BPD-005	DD-502	1D5D5	81J-005	5HK-D5	Sound IF Cathode

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	5000		A-BG-13962	BPD-005	DD-502	1D5D5	81J-005	5HK-D5	RF Bypass
C59	5			SI5		5W5V5	GP1K-050		Balancing Cap. †
C60	470	500	C-BF3-121	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Diode Load Cap.
C61	2000			SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	De-emphasis ††
C62	.01	200	C-BD-11738	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C63	.02	200	C-BD-17268	P488-02	DF-203	PTE452		2TM-S2	Tone Comp. *
C64	.01	200	C-BD-11738	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C65	.01	400	C-BD-10761	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C66	005	600	C-BD-10935	P488-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate††
C67	470	500	C-BF3-121	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Sync. Coupling
C68	.1	200	C-BD-10770	P288-1	DF-104	PTE4P1		2TM-P1	Sync. Coupling
C69	.01	400	C-BD-10761	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Sync. Sep. Plate
C70	005	600	C-BD-10935	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Sync. Coupling
C71	.02	400	C-BD-10774	P488-02	DF-203	PTE4S2		4TM-S2	Integrator Net
C72	05	400	C-BD-14461	P488-05	DF-503	PTE4S5		4TM-S5	Vert. Discharge
C73	.25	400	C-BD-13439	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C74	470	500	C-BF3-121	1469-0005	D6-471	5R5T5	GP2K-471	MS-35	Horiz. Sync. Coupling
C75	680	500	C-BF3 123	1469-0007	D6-681	2R5T7	GP2K-681	MS 37	Voltage Divider
C76	220	500	C-BF3-117	1469 00025	D6-221	5R5T25	GP2K-221	MS 32	Horiz. Feedback
C77	680	500	C-BF3-123	1469 0007	D6-681	2R5T7	GP2K-681	MS 37	Voltage Divider
C78	220	500	C-BF3-117	1469-00025	D6-221	5R5T25	GP2K-221	MS-32	Horiz. Feedback
C79	.02	600	C-BD 17288	P688-02	DF-203	PTE852		6TM-S2	AFC Filter
C80	.002	600	C-BD-10778	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	AFC Filter
C81	3900	500	C-BF31-132	1464 004	D6-402	1DR5D4	GP2-333-402	MS-24	Fixed Trimmer
C82	220	500	C-BF3-117	1469-00025	D6-221	5R5T25	GP2K-221	MS-32	Horiz. MV Feedback
C83	680	500	C-BF3 123	1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Horiz. Discharge
C84	.001	400	C-BD-12020	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling
C85	22		C-BG-11892		TCN-22		N750K-220	5TCU Q22	Horiz. Feedback
C86	.1	400	C-BD-17990	P488-1	DF-104	PTE4P1		4TM-P1	Horiz. Output Screen
C87	.1	200	C-BD-10770	P288-1	DF-104	PTE4P1		2TM P1	Fixed Trimmer ##
C88	.5	200	C-BD-11270	P288 5		GT2P5		2TM-P5	Horiz. Sweep Coupling
C90	1000	500	C-BF8-125	1469-001	D6-102	1WSD1	GP2L-102	1FM-21	RF Bypass

† Some models use 4.7MMF Mfgrs. Part # A-BG-12495-6 in this application.
† Some models use 12MMF Mfgrs. Part # C-BG-17305 in this application.
# Some models use 4MMF Mfgrs. Part # C-BG-11892 in this application.
†† Some models use 470MMF Mfgrs. Part # C-BF3-12 in this application.
†† Some models use .01MF Mfgrs. Part # C-BD-10761 in this application.
Some models use .05MF Mfgrs. Part # C-BD-10770 in this application.
* Not used in all models.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	A-10A-18641		RTV-218	SBBT-5I7-S	Contrast Control - Front
B	1Meg	½					Volume Control and SW - Tapped ①
							100KΩ - Rear
R2A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R2A per instructions
R3A	100KΩ	½	A-10B-17275	Q11-128	AG-49-S	AN-40	Vert. Hold Control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R3A per instructions
R4A	1000	½	A-10B-17788	Q11-134	AM-10-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FK8-1/4	AK-1	Attach to R4A per instructions
R5A	750KΩ	½	A-10B-18240		AG-61-S	AN-69	Vert. Size Control
B	Shaft		Not req.		FK8-1/4	AK-1	Attach to R5A per instructions
R6A	50KΩ	½	A-10B-17764	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	KS8-3	AK-4	Attach to R6A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	470KΩ 5%	1		BTS-470K-5%	Antenna Isolation
R8	680Ω	1	C-9B1-60	BTS-680	Antenna Coil Shunt
R9	10KΩ	1	C-9B1-74	BTS-10K	RF Amp. Grid
R10	68Ω	1	C-9B1-48		RF Amp. Cathode
R11	1000Ω 20%	1	C-9B1-13	BTS-1000	RF Amp. Screen
R12	5600Ω	1	C-9B1-71	BTS-5600	RF Coil Shunt
R13	10KΩ	1	C-9B1-74	BTS-10K	Mixer Grid
R14	220Ω	1	C-9B1-54	BTS-220	Conv. Cathode
R15	10KΩ	1	C-9B1-74	BTS-10K	Osc. Grid
R16	5600Ω	1	C-9B1-71	BTS-5600	Osc. Plate
R17	10Ω	1	C-9B1-38		Parasitic Suppressor
R18	10Ω	1	C-9B1-38		Parasitic Suppressor
R19	1000Ω 20%	1	C-9B1-13	BTS-1000	Decoupling
R20	1000Ω 20%	1	C-9B1-13	BTS-1000	AGC Network
R21	8200Ω	1	C-9B1-73	BTS-8200	1st. Video IF Amp. Grid
R22	82Ω	1	C-9B1-49	BTS-82	1st. Video IF Amp. Cathode
R23	1000Ω 20%	1	C-9B1-13	BTS-1000	1st. Video IF Amp. Decoupling
R24	1000Ω 20%	1	C-9B1-13	BTS-1000	AGC Network
R25	4700Ω	1	C-9B1-70	BTS-4700	2nd. Video IF Amp. Grid
R26	82Ω	1	C-9B1-49	BTS-82	2nd. Video IF Amp. Cathode
R27	1000Ω 20%	1	C-9B1-13	BTS-1000	2nd. Video IF Amp. Decoupling
R28	1000Ω 20%	1	C-9B1-13	BTS-1000	AGC Network
R29	8200Ω	1	C-9B1-73	BTS-8200	3rd. Video IF Amp. Grid
R30	82Ω	1	C-9B1-49	BTS-82	3rd. Video IF Amp. Cathode
R31	1000Ω 20%	1	C-9B1-13	BTS-1000	3rd. Video IF Amp. Decoupling
R32	4700Ω	1	C-9B1-70	BTS-4700	4th. Video IF Transformer Shunt
R33	120Ω	1	C-9B1-51	BTS-120	4th. Video IF Amp. Cathode
R34	68KΩ	1	C-9B3-64	BTA-68K	4th. Video IF Amp. Screen
R35	5600Ω	1	C-9B1-71	BTS-5600	4th. Video IF Amp. Plate Decoupling
R36	18KΩ	1	C-9B1-77	BTS-18K	5th. Video IF Transformer Shunt
R37	8200Ω	1	C-9B1-73	BTS-8200	Video Det. Diode Load
R38	33KΩ	1	C-9B1-80	BTS-33K	AGC Network
R39	68KΩ	1	C-9B1-84	BTS-68K	AGC Network
R40	2200Ω	1	C-9B1-66	BTS-2200	AGC Network
R41	2.2Meg		C-9B1-102	BTS-2.2Meg	Voltage Divider
R42	1Meg		C-9B1-98	BTS-1Meg	DC Restorer Diode Load
R43	6800Ω 20%	1	C-9B1-72	BTS-6800	Video Amp. Plate
R44	3300Ω	1	C-9B2-68	BTA-3300	Video Amp. Plate
R45	22KΩ 20%	2		BTB-22K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R46	5600Ω	1	C-9B2-71	BTA-5600	Decoupling
R47	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Video Amp. Grid
R48	100Ω	1	C-9B1-50	BTS-100	Video Amp. Cathode
R49	4700Ω 20%	2	C-9B4-70	BTB-4700	Video Amp. Plate
R50	1000Ω	10	C-9C14-1099	1 3/4A-1000	Voltage Divider - Wire Wound
R51	1200Ω	10	C-9C14-1100	1 3/4A-1200	Voltage Divider - Wire Wound
R52	68KΩ	1	C-9B1-84	BTS-68K	Voltage Divider
R53	22KΩ	1	C-9B1-78	BTS-22K	Picture Tube Grid
R54	100KΩ	1	C-9B1-88	BTS-100K	Picture Tube Cathode
R55	1000Ω	1	C-9B1-62	BTS-1000	Acc' Anode
R56	220KΩ	1	C-9B1-90	BTS-220K	Sound IF Transformer Shunt
R57	120Ω	1	C-9B1-51	BTS-120	Sound IF Amp. Cathode
R58	2200Ω	1	C-9B1-66	BTS-2200	Sound IF Amp. Decoupling
R59	22KΩ 20%	1	C-9B1-78	BTS-22K	Ratio Det. Diode Load
R60	27KΩ 20%	1		BTS-27K	De-emphasis - See Note 2
R61	47KΩ	1	C-9B1-83	BTS-47K	Tone Compensation - See Note 1
R62	10Meg 20%	1	C-9B1-37	BTS-10Meg	AF Amp. Grid
R63	220KΩ	1	C-9B1-90	BTS-220K	AF Amp. Plate
R64	470KΩ 20%	1	C-9B1-94	BTS-470K	Output Grid
R65	680Ω	1	C-9B2-60	BTA-680	Output Cathode
R66	10KΩ	1	C-9B1-74	BTS-10K	Isolation
R67	4.7Meg	½	C-9B1-104	BTS-4.7Meg	Sync. Sep. Grid
R68	68KΩ	½	C-9B4-84	BTB-68K	Sync. Sep. Plate
R69	8200Ω	½	C-9B1-73	BTS-8200	Voltage Divider
R70	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Sync. Amp. Grid
R71	470KΩ 5%	1	C-9B2-83	BTA-47K-5%	Sync. Amp. Plate
R72	56KΩ	½	C-9B1-83	BTS-56K	Integrator
R73	1.5Meg	½	C-9B1-100	BTS-1.5Meg	Vert. Osc. Grid
R74	220KΩ	½	C-9B1-90	BTS-220K	Vert. Osc. Plate
R75	220KΩ	½	C-9B1-90	BTS-220K	Vert. Osc. Plate
R76	3900Ω	½	C-9B1-69	BTS-3900	Vert. Peaking
R77	470KΩ 5%	½	C-9B1-94	BTS-470K-5%	Voltage Divider
R78	47KΩ	½	C-9B1-82	BTS-47K	Voltage Divider
R79	1Meg	½	C-9B1-98	BTS-1Meg	Vert. Amp. Grid
R80	1000Ω	½	C-9B1-62	BTS-1000	Vert. Amp. Cathode
R81	2200Ω	½	C-9B1-66	BTS-2200	Dampling
R82	470KΩ	½	C-9B1-94	BTS-470K	Horiz. Feedback Network - See Note 3
R83	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Det. Diode Load
R84	150KΩ	½	C-9B1-88	BTS-150K	Horiz. Phase Det. Diode Load
R85	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Det. Diode Load
R86	2.2Meg	½	C-9B1-102	BTS-2.2Meg	Horiz. Phase Det. Diode Load
R87	68KΩ 20%	1	C-9B1-84	BTS-68K	Horiz. AFC Filter
R88	1500Ω	1	C-9B1-64	BTS-1500	Horiz. MV Cathode
R89	5600Ω	1	C-9B2-71	BTA-5600	Horiz. MV Plate
R90	100KΩ	1	C-9B1-86	BTS-100K	Horiz. MV Grid
R91	220KΩ	1	C-9B1-90	BTS-220K	Horiz. MV Plate
R92	220Ω	1	C-9B1-54	BTS-220	Parasitic Suppressor
R93	470KΩ	1	C-9B1-94	BTS-470K	Horiz. Output Grid
R94	6800Ω	1	C-9B2-72	BTA-6800	Horiz. Output Screen
R95	680KΩ 20%	1	C-9B1-96	BTS-680K	Horiz. Feedback Network
R96	2.2Ω	1	C-9C1-1067		HV Rectifier Filament
R97	5600Ω	2	C-9B4-71	BTB-5600	Decoupling
R98	5600Ω	2	C-9B4-71	BTB-5600	Voltage Divider
R99	5600Ω	2	C-9B4-71	BTB-5600	Decoupling
R100	470KΩ 5%	2	C-9B1-94	BTS-470K-5%	Isolation

Note 1 Not used in all models.
Note 2 Some models use 10KΩ resistor in this application.
Note 3 Some models use 220KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	720VCT @ 1.8A	5VAC @ 3A	6.3VAC @ 1.5A SEC. 4 6.3VAC @ 7A	C12A-18659	P-8159	P-3059	TP395 and F633 ①

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	200Ω	1100Ω	B12M-18241	A-8111 ②	A-3000 ③	TB0-1 ②	Vert. Block Osc. Trans.
T3	870Ω	4Ω	C12M-18589-2		HV0-6 and MWC-1 ③		Horiz. Output Trans.
	Tap 82Ω	Tap 3Ω					
		SEC. 2 5.3Ω					
		SEC. 3 0Ω					
T4	990Ω	11.5	B12C-17303	A-8112	A-3036	TS0-5 ①	Vert. Output Trans.
T5A	12.5Ω		B13M-13590	DY-1	MD-12		Horiz. Deflection Coils
B	61Ω						Vert. Deflection Coil.

① Drill one new mounting hole.
② Used for AGC winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T6	6.9KΩ	3Ω	480Ω	9Ω	B12C-18743	A-3878	A-2931	R0-15 ①	① Drill one new mounting hole.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIR LINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3Ω	C18A-18745 ④	6J6	6A15	④ Used in models 05BR-3024B, 05BR-3027A
B	PM	3Ω	C18A-18865 ⑤	10J12	10A4A	⑤ Used in model 05BR-3021B
	CONE DIA.	V. C. DIA.				
SP2A	5 7/8"	9/16"				
B	9 7/8"	1"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	38Ω	1.3 Henries	B16A-17959	C-2326 ②	C-2991	TR3300 ②	② Drill one new mounting hole.
L2	.250A	38Ω	1.3 Henries	B16A-17959	C-2326 ②	C-2991	TR3300 ②	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIR LINE PART No.	MEISSNER PART No.	
L3	High Band Ant. Trans.	.1Ω	.1Ω	B-201-17143		
L4	Low Band Ant. Trans.	.1Ω	.1Ω			Part of L3
L5	RF Choke	.9Ω		A-16A-17128		
L6	RF Coil Pri.	.1Ω		B-13E-17140		High Band
L7	RF Coil Sec.	.1Ω		B-13E-17140		High Band
L8	RF Coil Pri.	.1Ω		B-13E-12046		Low Band
L9	RF Coil Sec.	.1Ω		B-13E-12046		Low Band
L10	Osc. Coil	.1Ω		B-13E-17140		High Band
L11	Osc. Coil	.1Ω		B-13D-12155		Low Band
L12	Conv. Plate Trap	11Ω		A-16A-18025		
L13	1st. Video IF	.4Ω		A-13M-18026		
L14	Fil. Choke	.3Ω		A-201-15609		
L15	2nd. Video IF	.2Ω		B-201-15612		
L16	3rd. Video IF	.2Ω		B-201-15612		
L17	4th. Video IF	.2Ω		B-201-15612		
L18	RF Choke	2.4Ω		A-201-15608		
L19	5th. Video IF	1.3Ω	1.3Ω	B-13B-18784		
L20	Fil. Choke	1.1Ω		A-16A-17937		
L21	Peaking	2.3Ω		A-16A-17961		
L22	4.5MC Trap	2.5Ω		A-201-18695		Includes C49
L23	Peaking	20Ω		A-16A-18685		
L24	Peaking	15Ω		A-16A-18685		
L25	Peaking	20Ω		A-16A-19486		
L26	1st. Sound IF	1Ω		B-13A-18783		
L27	Ratio Det. Trans.	4.2Ω	.2Ω	B-13M-17273		Tap. .6Ω
L28	Horiz. Osc.	60Ω		A-13D-16943		
L29	Horiz. Size	.2Ω		A-13M-18233		
L30	Horiz. Lin.	3.6Ω	Tap. 1Ω	A-13M-18961		

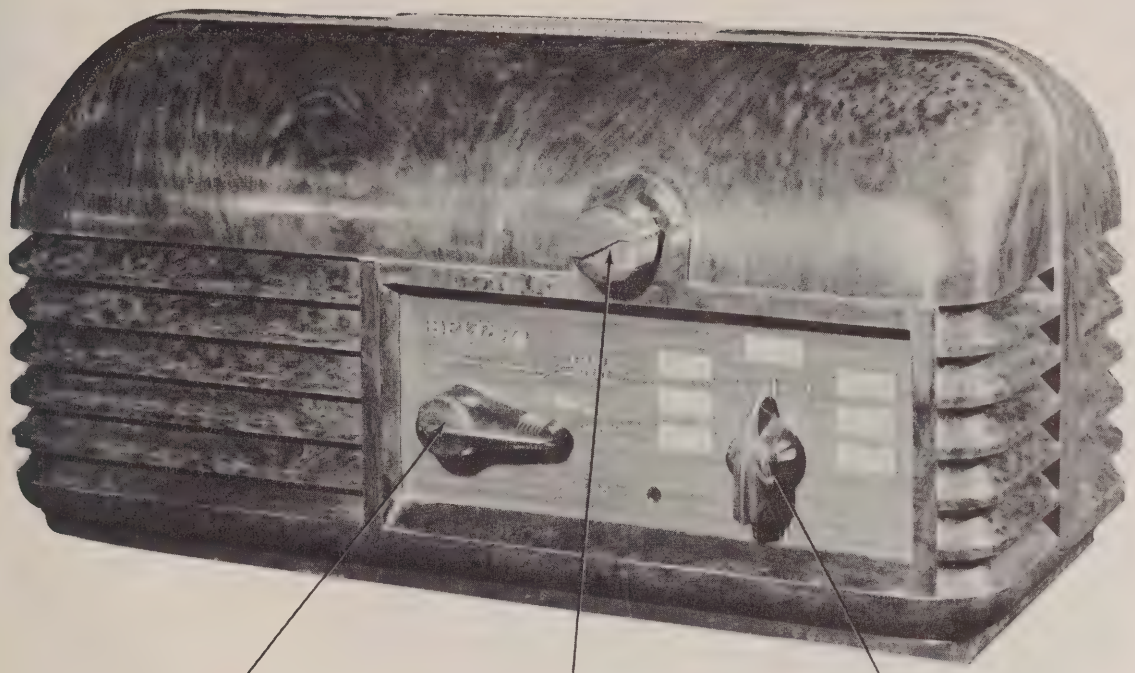
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			AIR LINE PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	.250	A46B-18362	A55F-18024	312.250	357001	

MISCELLANEOUS

ITEM No.	PART NAME	AIR LINE PART No.	NOTES
M2	RF Tuner	C-211-18742	
M3	Switch	A-20F-12108	(Phono-TV)
M4	Focus Magnet	B-55P-18914	
M5	Ion Trap	B-16M-17982	
B2	Trimmer	A-8E-18508	80-480MMF. (Horiz. Drive)
	Knob	A-5B-18781-76	Tuner
	Knob	B-5B-17761-76	Volume
	Knob	B-5B-17762-76	Contrast
	Knob	B-5B-18382-36	Antenna
	Knob	B-5B-18244-76	3 Used (Models 05BR-3021B, 05BR-3024B)
	Knob	B-5B-18244-56	3 Used (Model 05BR-3027A)
	Pointer	A-2G-18788	

BELL SOUND
MODEL 420



BELL SOUND
MODEL 420

TRADE NAME	Bell Sound, Model 420 (Belfone)
MANUFACTURER	Bell Sound Systems Inc., 1183 Essex Ave., Columbus, Ohio
TYPE SET	AC-DC Operated Intercommunications System
TUBES (THREE)	Types 12SJ7 AF Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .25 Amp. at 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		BELL SOUND PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12SJ7	12SJ7	8N	
V2	Power Output	50L6GT	50L6GT	7AC	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	30	250		AFH3-89		UP3325C		TVL-3513	■ Filter
B	30	250							▲ Filter
C	20	25							Power Output Cathode
C2	12	150		PRS150/12		BR1215		TVA-1407	Decoupling †
C3	10	25		PRS25/10		BR102A		TVA-1204	AF Amp. Cathode
C4	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Fixed Trimmer
C5	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	AF Amp. Screen
C6	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Audio Coupling
C7	.1	600		P688-1	D6-104	PTE6P1		6TM-P1	Line Isolation

† Some models use 8MFD. in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	Bell Sound PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1	20Ω	2					Volume Control and Switch - Wire Wound
R2A	500KΩ	½		Q13-133	AG-60-Z	AN-60	Master Gain Control
B	Shaft			RQ	FKS-1/4	AK-1	Attach to R2A per instructions

RESISTORS

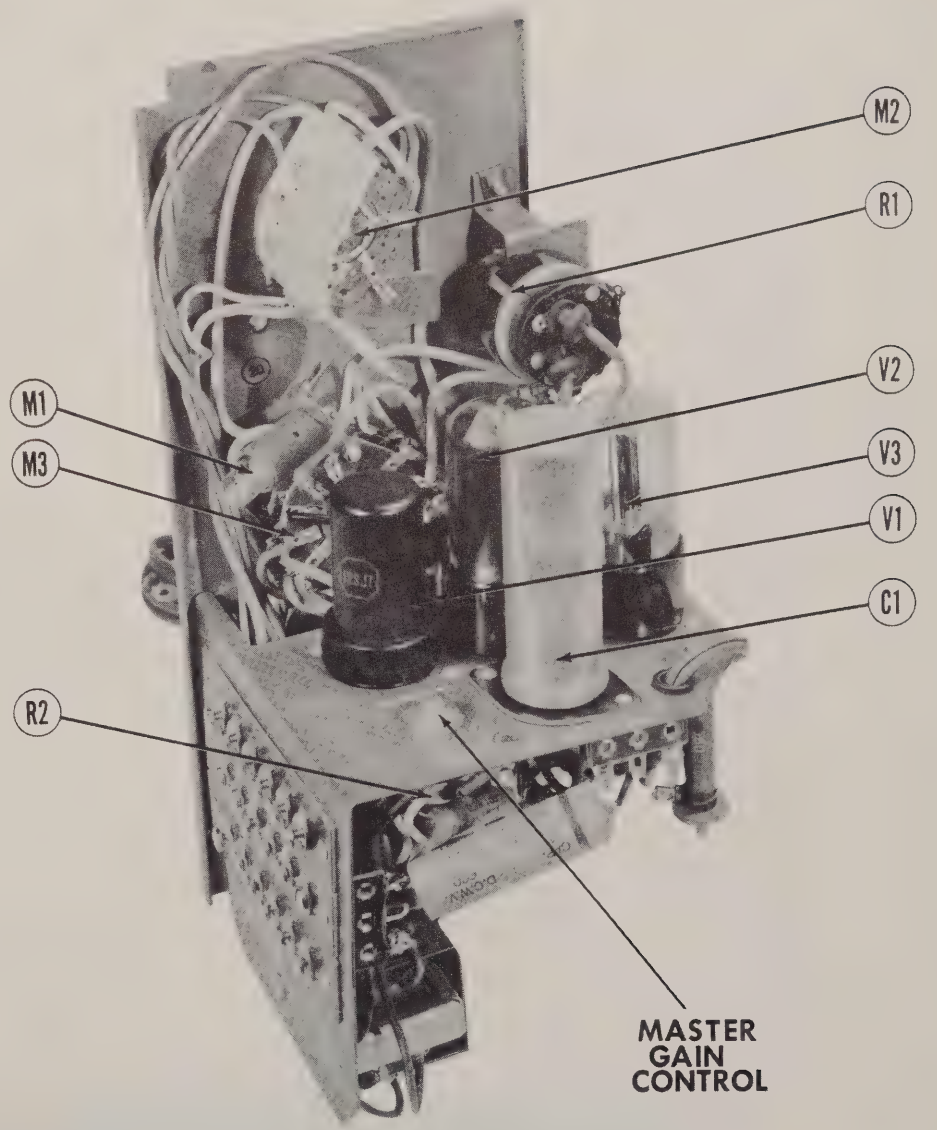
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
R3	4700Ω	½		BTS-4700	AF Amp. Cathode
R4	1.8Meg	½		BTS-1.8Meg	AF Amp. Screen
R5	470KΩ	½		BTS-470K	AF Amp. Plate
R6	470KΩ	½		BTS-470K	Output Grid
R7	150Ω	1		BTA-150	Output Cathode
R8	2000Ω	½		BTS-1800	Decoupling
R9	470Ω	1		BTA-470	Filter
R10	150Ω	½		BW-½-150	Surge Limiter - Wire Wound
R11	150Ω	10		1 3/4A-150	Filament Dropping - Wire Wound
R12	2.8Ω	½			Volume Control Shunt - Wire Wound - See Note 1

Note 1 Some models use parallel resistors to obtain desired value.

TRANSFORMER (AUDIO (INPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3.3Ω	500KΩ	.3Ω	1.2KΩ	B-20093				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	2.5KΩ	3.5Ω	120Ω	.6Ω	B-20176	A-3332 ①	A-3025	RO-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BELL SOUND PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST113 Model P-4X	4A1	
SP1	PM	3.5Ω				
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

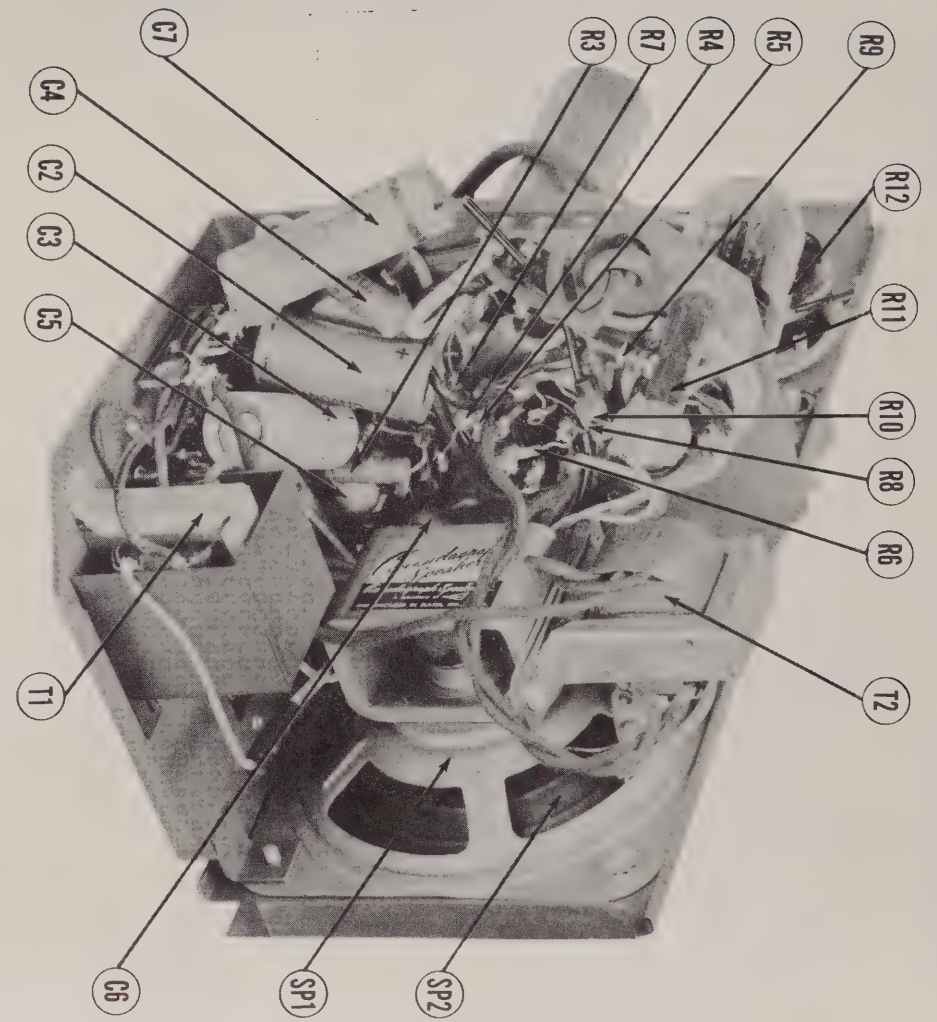
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BELL SOUND PART No.		
M1	Bayonet	6-8	.15	Brown			Type # 47

MISCELLANEOUS

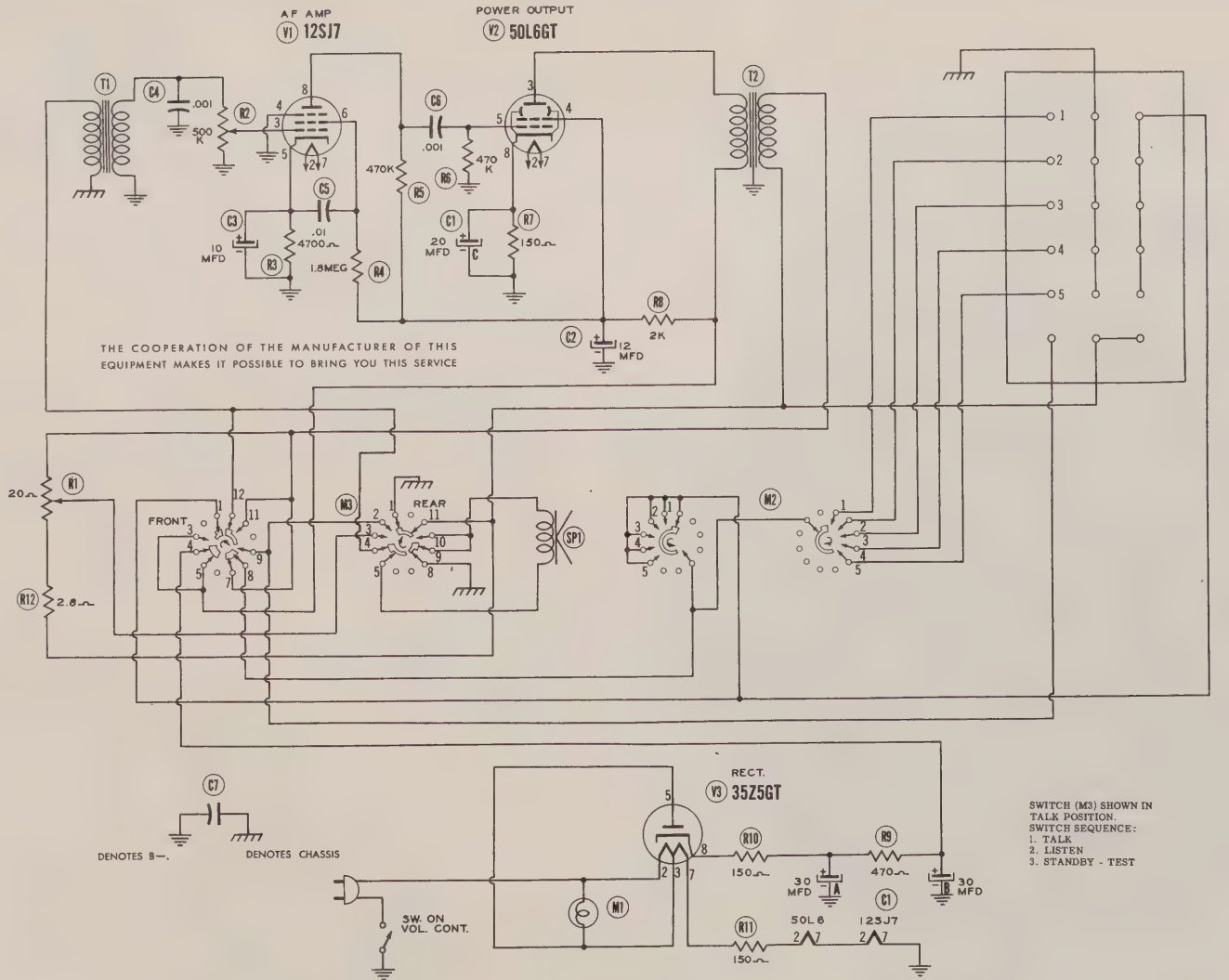
ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M2	Switch	B-12202	Station Selector
M3	Switch	B-12201	Talk-Listen

CHASSIS—BOTTOM VIEW



BELL SOUND MODEL 420

BELL SOUND MODEL 420



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SJ7	0V	12VAC	1VDC	0V	1VDC	5.8VDC	0V	19VDC
V 2	50L6GT	0V	60VDC	95VDC	90VDC	.1VDC	100VDC	12VAC	6.8VDC
V 3	35Z5GT	0V	117VAC	110VAC	0V	110VAC	0V	85VAC	125VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SJ7	0Ω	12Ω	4.7KΩ	0Ω	4.7KΩ	†1.8Meg	0Ω	†470KΩ
V 2	50L6GT	0Ω	62Ω	†600Ω	†2.4KΩ	450KΩ	†485Ω	12Ω	150Ω
V 3	35Z5GT	Inf.	247Ω	230Ω	Inf.	230Ω	†485Ω	215Ω	90KΩ

† MEASURED FROM PIN 8 OF V3

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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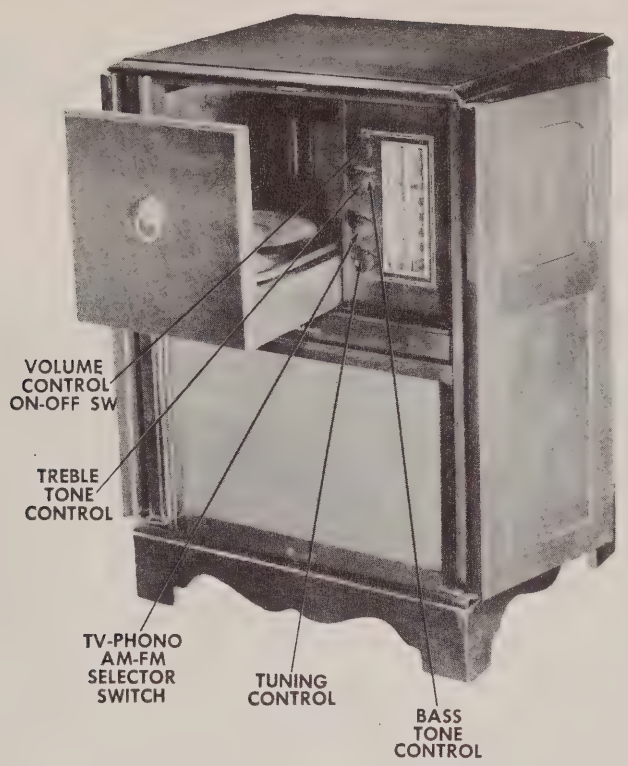
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CAPEHART
MODEL 1007AM (Ch. C-318)

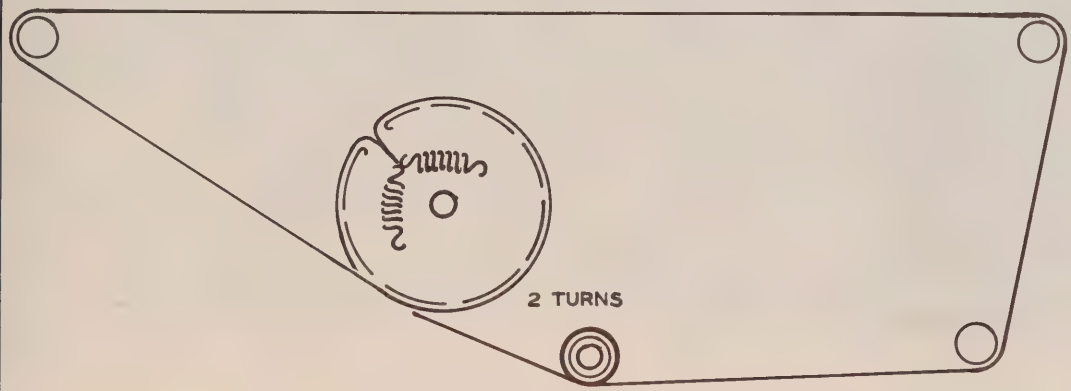


CAPEHART
MODEL 1007AM (Ch. C-318)

TRADE NAME	Capehart, Model 1007 AM (Ch. C-318)
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne, Indiana
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES(ELEVEN)	Types 6BA6 RF Amp., 12AT7 FM converter, 6BE6 AM converter, 6BA6 1st IF Amp., 6BA6 2nd IF Amp., 6AL5 Ratio Det., 6SQ7 AM Det.-AVC-AF, 6SQ7 Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 volts AC — RATING .85 amp. @ 117 volts AC
TUNING RANGE — BROADCAST	540-1620KC — FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 950 IN PHOTOFACT SET 107 FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

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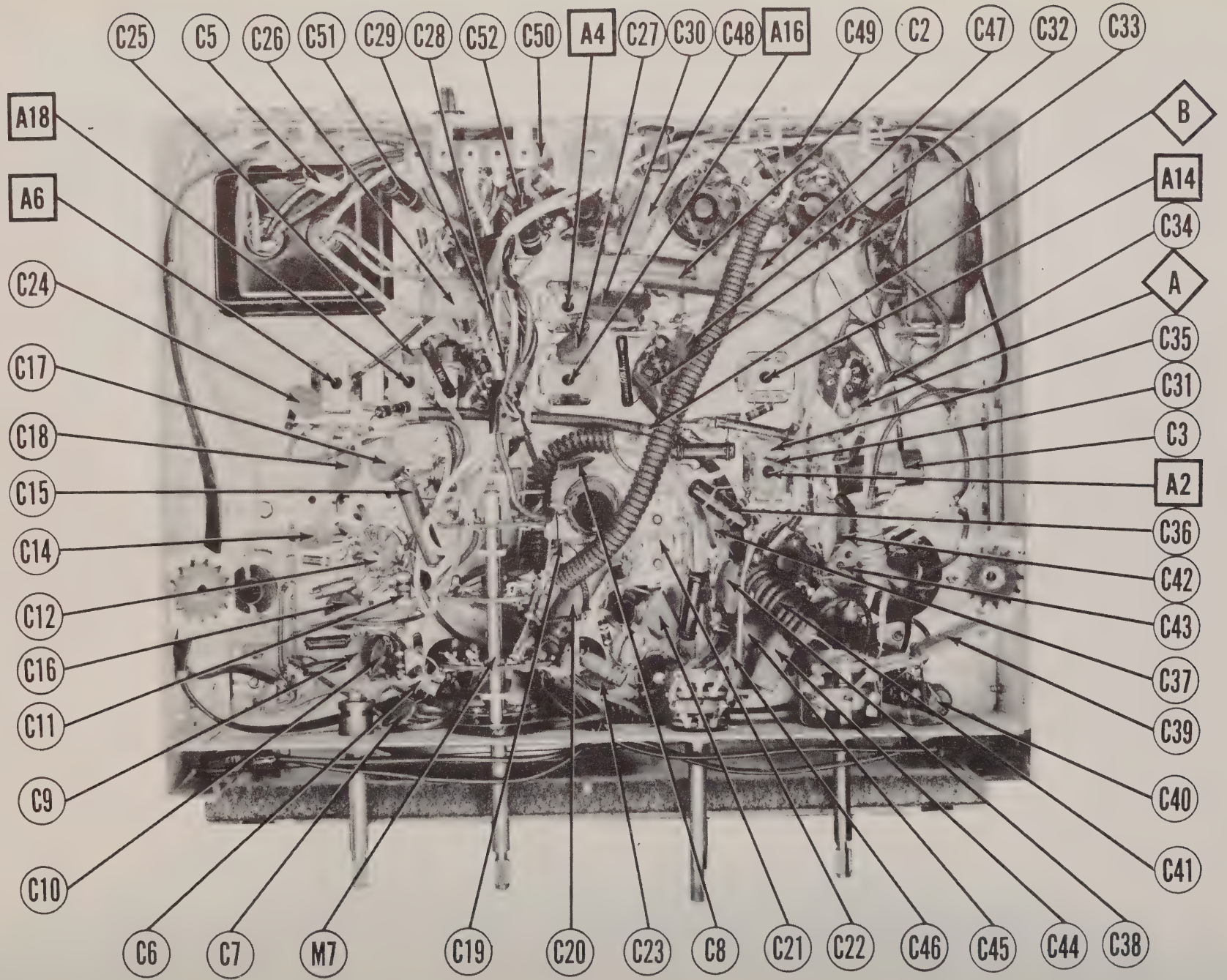
C25
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C26
C51
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A4
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C48
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M7
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C8
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C46
C45
C44
C38

T2
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R9
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R3
R20
R47
R21
R22
R45
R44
R43
R23
R40
R25
R33
R41
R42

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	FM-AM RF Amp.	6BA6	6BA6	7BK	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	6BE6	6BE6	7CH	
V4	1st FM-AM IF Amp.	6BA6	6BA6	7BK	
V5	2nd. FM-AM IF Amp	6BA6	6BA6	7BK	
V6	Ratio Detector	6AL5	6AL5	6BT	
V7	AM Det. -AVC-AF	6SQ7	6SQ7	8Q	
V8	Phase Inverter	6SQ7	6SQ7	8Q	
V9	Power Output	6V6GT	6V6GT	7AC	
V10	Power Output	6V6GT	6V6GT	7AC	
V11	Rectifier	5Y3GT	5T3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	450		AFH 3-37		UP32245		TVL-3782	▲ Filter
B	20	450							■ Filter
C	20	450							▲ Filter
C2	25	25		PRS 25/25		BR252A		TVA-1205	Power Output Cathode
C3	4	150		PRS 150/4		BR415		TVA-1402	Stabilizing Cap.
C4	47	500		1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	Fixed Trimmer
C5	20			SI20		5W5Q25	GP1K-200	5GA-Q22	AM RF Coupling
C6	240			SI240		5W5T25	GP2K-241		RF Coupling
C7	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C8	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Amp. Plate
C9	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Amp. Screen
C10	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Amp. Cathode
C11	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	FM RF Coupling
C12	1			1468-000001	TCZ-1		NP0K-010		FM Osc. Coupling
C13	30						N330K-300		FM Osc. Grid Cap.
C14	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM Osc. Plate
C15	100			SI100NP0	TCZ-100		NP0-333-101	5TCC-T1	Fixed Trimmer
C16	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM Mixer Cathode
C17	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM Mixer Plate Dec.
C18	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C19	1			1468-000001	TCZ-1		NP0K-010		AM RF Coupling
C20	.047	200		P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C21	47	500		1469-00005	TCZ-47	5R5Q5	NP0L-470	MS-45	AM Osc. Grid Cap.
C22	20			SI20NP0	TCZ-20		NP0K-200		Fixed Trimmer
C23	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	AM Osc. Anode
C24	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Conv. Plate Dec.
C25	1500	500		1468-0015	D6-152	1W5D15	GP2L-152	1FM-215	1st IF Amp. Grid
C26	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C27	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st IF Amp. Plate
C28	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st IF Amp. Screen
C29	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C30	1500	500		1468-0015	D6-152	1D5D15	GP2L-152	1FM-215	2nd IF Amp. Grid
C31	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd IF Amp. Plate
C32	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd IF Amp. Screen
C33	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd IF Amp. Cathode
C34	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C35	150	500		1468-00015	D6-151	5W5T15	GP2K-151	1FM-315	RF Bypass
C36	.0033	600		P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D33	De-Emphasis
C37	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Diode RF Filter
C38	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Diode RF Filter
C39A	20		♦	SI20		5W5Q2	GP1K-200	5GA-Q22	Tone Comp.
B	.01		♦	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Comp.
C	2000		♦	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	Tone Comp.
D	2000		♦	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	Tone Comp.
C40	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.
C41	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C42	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Bias Filter
C43	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AF Amp. Plate
C44	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.
C45	.022	600		P688-022	DF-203	PTE6S2		6TM-S22	Audio Coupling
C46	470	500		1468-0005	D6-471	5W5T5	GP2-333-471	1FM-35	Tone Comp.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R42	220KΩ	½		BTS-220K	Output Grid
R43	220KΩ	½		BTS-220K	Output Grid
R44	220KΩ	½		BTS-220K	Output Grid
R45	270Ω	2		BW-2-270	Output Cathode
R46A	400Ω	5			Filter-Wire Wound
B	1000Ω	5			Filter-Wire Wound
R47	15Ω	½		BW-½-15	Bias Network

♦ Items R36A, R36B, R36C, R36D, R36E, R36F, C29A, C39B, C39C, and C39D are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ .85A	600VCT .115ADC	5VAC @ 2A	6.3VAC @ 3.8A			P-2973	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	9KCT	5.5Ω	680ΩCT	.5Ω		A-3831	A-2936	RO-110 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
SP1	FIELD	V.C. IMP.		ST102 Mod. P12-S	12A6	
	PM	5.5Ω				
	CONE DIA.	V.C. DIA.				
SP2	11 7/8"	1"				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA:	NOTES
L1	FM Ant. Coil	0Ω				
L2	RF Choke	.4Ω				
L3	Fil. Choke	.4Ω				
L4	FM RF Coil	0Ω				
L5	FM Osc. Coil	0Ω				
L6	Fil. Choke	.4Ω				
L7	AM Loop Ant.	.7Ω		750166A-1		
L8	AM Wave Trap	14Ω				
L9	AM Loading Coil	2.1Ω				
L10	RF Choke	.4Ω				
L11	AM RF Coil	70Ω	3.8Ω			
L12	RF Choke	.4Ω				
L13	RF Choke	.4Ω				
L14	AM Osc. Coil	2.9Ω				Tap .4Ω
L15	1st FM IF	.4Ω	1Ω	650251A-1		
L16	1st AM IF	10.5Ω	10.5Ω	452019A-1		
L17	2nd FM IF	.7Ω	.7Ω	452027A-1		
L18	2nd AM IF	10.5Ω	10.5Ω	452019A-1		
L19	Ratio Det. Trans.	5.5Ω	.7Ω	452028A-1		Tap 1.2Ω
L20	3rd AM IF	10Ω	10Ω	450336A-1		

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C47	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C48	.022	600		P688-022	DF-203	PTE6S2		6TM-S22	Audio Coupling
C49	.0033	600		P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D33	Power Output Plate
C50	.0033	600		P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D33	Power Output Plate
C51	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Line Filter
C52	.0047	600		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Line Filter

♦ Items C39A, C39B, C39C, C39D, R36A, R36B, R36C, R36D, R36E, and R36F are combined into one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Capehart PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	3.2Meg	1/2					Volume Control and SW
B	3.2Meg	1/2					
R2A	3.2Meg	1/2					Bass tone control-front
B	500KΩ	1/2					Treble tone control-rear

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CAPEHART PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R3	220KΩ	1/2		BTS-220K	Antenna Isolation
R4	1Meg	1/2		BTS-1Meg	RF Amp. Grid
R5	68Ω	1/2			RF Amp. Cathode
R6	33KΩ	1/2		BTS-33K	RF Amp. Screen
R7	1000Ω	1/2		BTS-1000	RF Amp. Plate Decoupling
R8	2200Ω	1/2		BTS-2200Ω	FM Mixer Cathode
R9	1000Ω	1/2		BTS-1000	FM Mixer Decoupling
R10	10KΩ	1/2		BTS-10K	FM Osc. Grid
R11	1000Ω	1/2		BTS-1000	FM Osc. Plate
R12	1Meg	1/2		BTS-1Meg	AVC Network
R13	47Ω	1/2			Parasitic Suppressor
R14	100KΩ	1/2		BTS-100K	AM Conv. Grid
R15	1000Ω	1/2		BTS-1000	AM Conv. Decoupling
R16	22KΩ	1/2		BTS-22K	AM Osc. Grid
R17	15KΩ	1		BTA-15K	AM Osc. Anode
R18	1Meg	1/2		BTS-1Meg	AVC Network
R19	1Meg	1/2		BTS-1Meg	1st IF Amp. Grid
R20	68Ω	1/2			1st IF Amp. Cathode
R21	33KΩ	1/2		BTS-33K	1st IF Amp. Screen
R22	1000Ω	1/2		BTS-1000	1st IF Amp. Plate Decoupling
R23	1Meg	1/2		BTS-1Meg	2nd IF Amp. Grid
R24	68Ω	1/2			2nd IF Amp. Cathode
R25	33KΩ	1/2		BTS-33K	2nd IF Amp. Screen
R26	1000Ω	1/2		BTS-1000	2nd IF Amp. Plate Decoupling
R27	15KΩ	1/2		BTS-15K	Ratio Det. Diode Load
R28	220KΩ	1/2		BTS-220K	AVC Network
R29	68Ω	1/2			Ba lancing
R30	22KΩ	1/2		BTS-22K	De-Emphasis
R31	47KΩ	1/2		BTS-47K	Diode Filter
R32	220KΩ	1/2		BTS-220K	Diode Load
R33	680KΩ	1/2		BTS-680K	Phono Input Shunt
R34	470KΩ	1/2		BTS-470K	AVC Network
R35	4.7Meg	1/2		BTS-4.7Meg	Delayed AVC Network
R36A	150KΩ	1/2	♦	BTS-150K	Tone Compensation
B	1Meg	1/2		BTS-1Meg	Tone Compensation
C	100KΩ	1/2		BTS-100K	Tone Compensation
D	1Meg	1/2		BTS-1Meg	Tone Compensation
E	1Meg	1/2		BTS-1Meg	Tone Compensation
F	2Meg	1/2		BTS-2Meg	Tone Compensation
R37	10Meg	1/2		BTS-10Meg	AF Amp. Grid
R38	220KΩ	1/2		BTS-220K	AF Amp. Plate
R39	1Meg	1/2		BTS-1Meg	Bias Network
R40	10Meg	1/2		BTS-10Meg	Phase Inv. Grid
R41	220KΩ	1/2		BTS-220K	Phase Inv. Plate

SET 150 FOLDER 5

CAPEHART
MODEL 1007AM (Ch. C-318)

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA CAPEHART PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		ACD-J	A-1 A-3	W22AB	A65MG A62A	96-T	0-1 or S-1 and 0-3 or S-3	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA CAPEHART PART No.	WALCO PART No.	REMARKS
M2		W-11A or W-11MGA	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA CAPEHART PART No.		NOTES
M3	Bayonet	6-8	.25	Blue			Type number 47.
M4	Bayonet	6-8	.25	Blue			Type number 47.
M5	Bayonet	6-8	.25	Blue			Type number 47.
M6	Bayonet	6-8	.25	Blue			Type number 47.

MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M7	Switch		Function
M8	3 Gang Var. Cap.	650249A-1	(14-528MMF, 14-520MMF, 10-198MMF)

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	-.1VDC	0V	0V	6.3VAC	200VDC	85VDC	.8VDC		
V 2	12AT7	‡200VDC	0V	‡4.8VDC	6.3VAC	6.3VAC	‡200VDC	§‡-4.5VDC	0V	0V
V 3	6BE6	§ -8.9VDC	0V	0V	6.3VAC	200VDC	100VDC	-.2VDC		
V 4	6BA6	‡-.1VDC -.2VDC	0V	0V	6.3VAC	‡185VDC 195VDC	90VDC	.8VDC		
V 5	6BA6	‡0V -.1VDC	0V	0V	6.3VAC	‡185VDC 195VDC	90VDC	.8VDC		
V 6	6AL5	‡-1.3VDC	‡-.1VDC	6.3VAC	0V	0V	0V	‡-.8VDC		
V 7	6SQ7	0V	-.6VDC	0V	-.5VDC	.2VDC	150VDC	0V	6.3VAC	
V 8	6SQ7	0V	-.5VDC	0V	-1.8VDC	-1.8VDC	150VDC	6.3VAC	0V	
V 9	6V6GT	0V	0V	275VDC	225VDC	0V	0V	6.3VAC	16VDC	
V 10	6V6GT	0V	0V	275VDC	225VDC	0V	0V	6.3VAC	16VDC	
V 11	5Y3GT	0V	295VDC	0V	305VAC	-1.8VDC	305VAC	0V	295VDC	
V 12										
V 13										

ALL MEASUREMENTS TAKEN IN AM AND FM POSITION ONLY.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

‡ MEASURED IN FM POSITION.

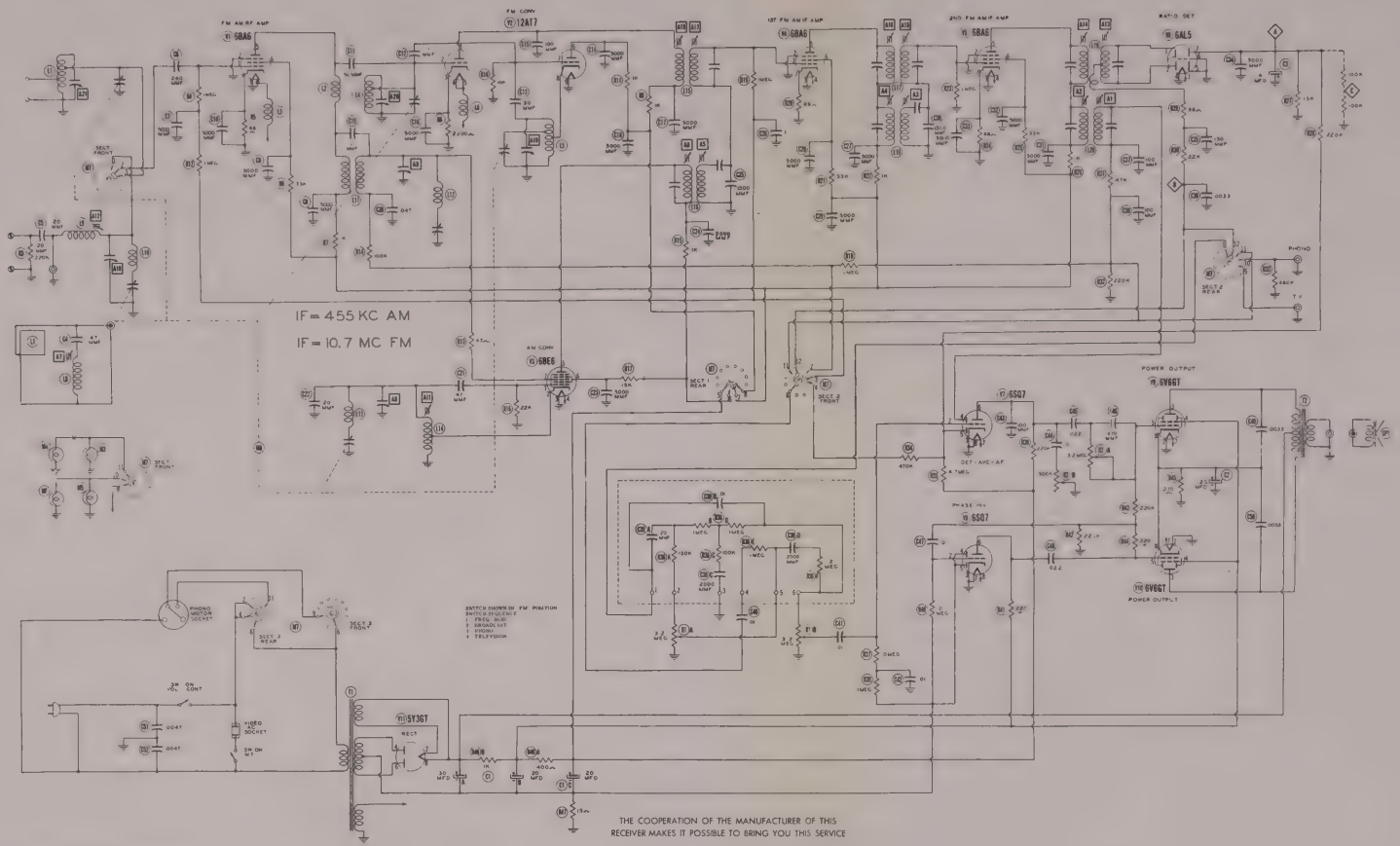
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	‡2.7Meg 3.2Meg	0Ω	0Ω	.4Ω	†2.4KΩ	†34KΩ	68Ω		
V 2	12AT7	‡†2.4KΩ	0Ω	2.2KΩ	.4Ω	.4Ω	‡†2.4KΩ	10KΩ	0Ω	0Ω
V 3	6BE6	22KΩ	.4Ω	0Ω	.1Ω	†2.4KΩ	†16KΩ	1.3Meg		
V 4	6BA6	‡1.9Meg 2.2Meg	0Ω	0Ω	.1Ω	†2.4KΩ	†34KΩ	68Ω		
V 5	6BA6	1Meg	0Ω	0Ω	.1Ω	†2.4KΩ	†34KΩ	68Ω		
V 6	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	15KΩ		
V 7	6SQ7	0Ω	11Meg	0Ω	265KΩ	235KΩ	†220KΩ	0Ω	.1Ω	
V 8	6SQ7	Inf.	10Meg	0Ω	15KΩ	15KΩ	†220KΩ	.1Ω	0Ω	
V 9	6V6GT	0Ω	0Ω	†340Ω	†1KΩ	440KΩ	220KΩ	.1Ω	270Ω	
V 10	6V6GT	0Ω	0Ω	†340Ω	†1KΩ	440KΩ	220KΩ	.1Ω	270Ω	
V 11	5Y3GT	Inf.	130KΩ	Inf.	80Ω	15Ω	75Ω	Inf.	130KΩ	
V 12										
V 13										

ALL MEASUREMENTS TAKEN IN AM AND FM POSITION.

‡ MEASURED IN FM POSITION.
† MEASURED FROM PIN 8 OF V11.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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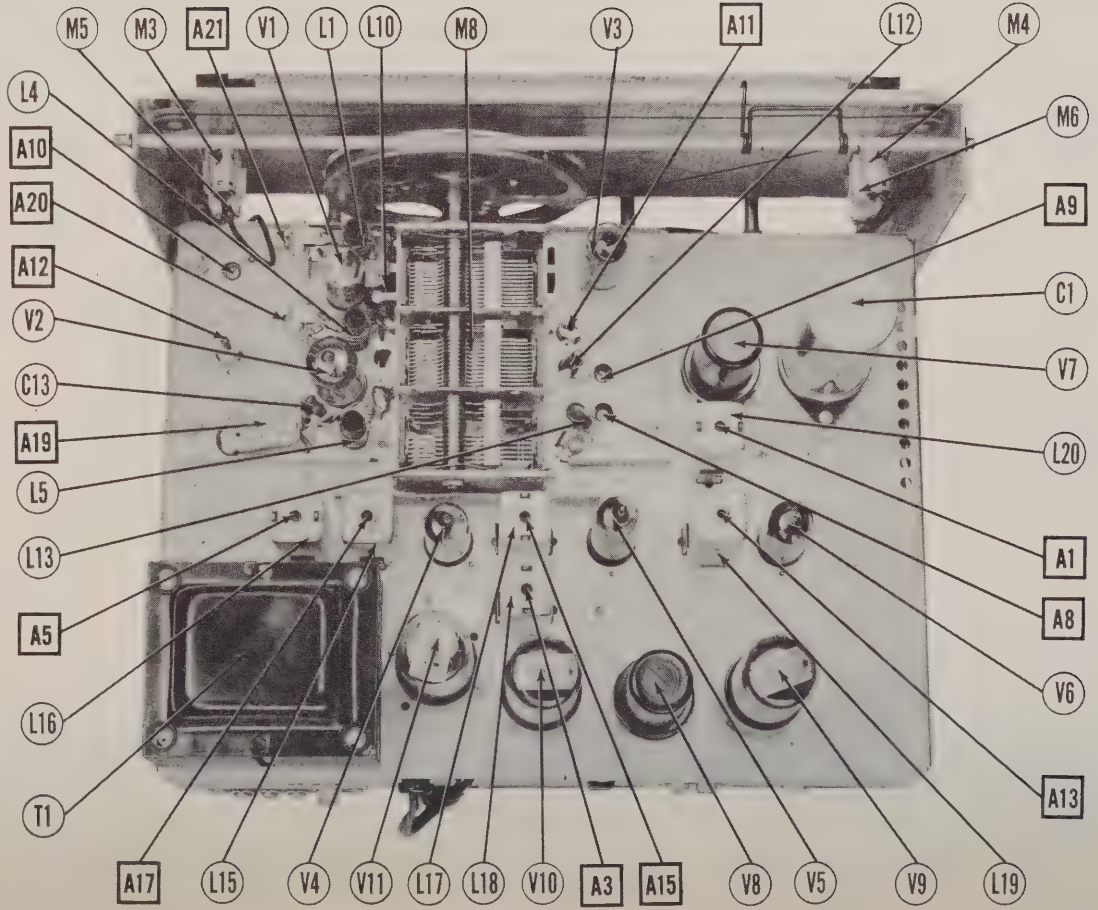
M5
M3
A21
V1
L1
L10
M8
V3
A11
L12
M4
M6
L4
A10
A20
A12
V2
C13
A19
L5
L13
A5
L16
T1
A9
C1
V7
L20
A1
A8
V6
A13
A17
L15
V4
V11
L17
L18
V10
A3
A15
V8
V5
V9
L19

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
.1	.1MFD	High side to pin 7, (grid) of 6BE6, (V3). Low side to chassis.	455KC (400∿Mod.)	AM (third pos. clockwise)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	100MMF	High side to "AM" ant. terminal on rear of chassis. Low side to chassis.	"	"	"	"	A7	Adjust for MINIMUM deflection.
3.		Loop	1620KC	"	"	"	A8, A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	1500KC	"	1500KC	"	A10	"
5.		Loop	600KC	"	600KC	"	A11, A12	Fashion loop of several turns of wire and radiate signal into loop receiver. Adjust for maximum output. Repeat steps 3, 4, and 5 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point Ⓐ to chassis. The junction of these two resistors is alignment Point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	1000MMF	High side to pin 1, (grid) of 6BA6, (V5). Low side to chassis.	10.7MC (Unmod.)	FM (Max. CW)	Tuning gang fully open.	DC probe to point Ⓐ. Common to Ⓒ	A13,A14	Adjust for maximum deflection.
7.	"	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	"	"	"	"	A15,A16	"
8.	"	High side to pin 2 (grid) of 12AT7, (V2). Low side to chassis.	"	"	"	"	A17,A18	"
9.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	1000MMF	High side to pin 1 (grid) of 6BA6, (V5). Low side to chassis.	10.7MC (500KCSWP)	FM (Max. CW)	Point of non-interference	Vert. amp. to point Ⓐ. Low side to chassis.	A13,A14	Disconnect stabilizor capacitor C3. Detune A13 and connect a 350MMF capacitor across the secondary. Adjust A14 for maximum amplitude of response curve. Remove 350MMF capacitor and adjust A13 for maximum amplitude of response as per fig 1.
7.	"	High side to pin 1 (grid) of 6BA6, (V4). Low side to chassis.	"	"	"	"	A15,A16	Adjust for maximum amplitude and symmetry as per fig. 1.
8.	"	High side to pin 2, (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A17,A18	"
9.	"	"	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Reconnect capacitor C3. Adjust for symmetrical "S" curve with 10.7MC marker at center as shown in fig. 2.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	330Ω carbon resistor	High side thru 330Ω to ungrounded "FM" ant. terminal. Low side to chassis.	108.5MC (Unmod.)	FM	108.5MC	DC probe to point Ⓐ. Common to chassis.	A19	Adjust for maximum deflection.
11.	"	"	105MC	"	105MC	"	A20,A21	"

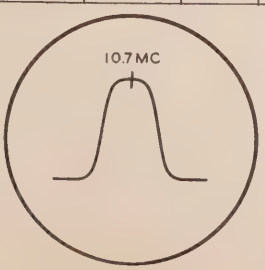

FIG. 1

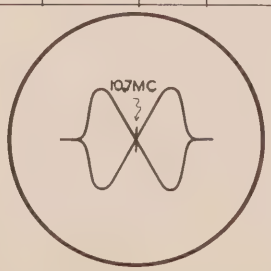

FIG. 2

CHEVROLET
MODEL 986516

CHEVROLET
MODEL 986516

TRADE NAME	Chevrolet, Model 986516
SUPPLIER	Chevrolet Motors, Div. of General Motors, Detroit, Michigan
TYPE SET	Battery Operated Custom-Built 1951 Chevrolet, Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 Det.-AVC-AF, 6V6GT Power Output, 6X5GT Power Output
POWER SUPPLY	6Volts Storage Battery — RATING 7 Amp. at 6.3Volts DC
TUNING RANGE—BROADCAST	540-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD.	High side to pin 7, (Grid) of 6BE6, (V2) Low side to chassis.	257.5KC (400∿ Mod.)	High freq. end stop. (Cores fully out)	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	75MMF.	High side thru dummy to ant. receptacle. Low side to chassis.	1610KC	"	"	A5, A6, A7	"
	The following adjustments should not be required unless some part, or all of, the tuning unit has been replace.						
3.	75MMF.	High side thru dummy to ant. receptacle. Low side to chassis.	1400KC	1400KC	Across voice coil.	A8, A9, A10	Adjust for maximum output.
4.	"	"	1610KC	High freq. end.	"	A6, A7	Adjust for maximum output. Repeat steps 2, 3, and 4 until no further improvement can be made.
	After set is installed fully extend the antenna and tune in a weak station near 1400KC. Adjust A7 for maximum output.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		CHEVROLET PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	1217690	6BA6	7BK	
V2	Converter	1217691	6BE6	7CH	
V3	IF Amplifier	1217690	6BA6	7BK	
V4	Det.-AVC-AF	1218105	6AT6	7BT	
V5	Power Output	1213793	6V6GT	7AC	
V6	Rectifier	1213794	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CHEVROLET PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	10	350	1218009	AFH3-104		UP115S135C		TVL-3630	■ Filter
B	15	350							▲ Filter
C	20	25							Output Cathode
C2	.05	600	6537	P688-05	DF-503	PTE6S5		6TM-S5	AVC Filter
C3	.05	600	6537	P688-05	DF-503	PTE6S5		6TM-S5	RF Bypass
C4	100	500	G100	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	RF Coupling
C5	300	500	G331	1468-0003	D6-331	5W5T3	GP2K-331	MS-33	AVC Filter
C6	50	500	G470	1469-00005		5R5Q5	NP0-333-500	MS-45	Osc. Grid Cap.
C7	330	500	1219566	1469-00035					Fixed Trimmer
C8	.005	100	6531	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Aduio Coupling
C9	.005	400	6531	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C10	500	500	G471	1468-0005	D6-501	5W5T5	GP2K-501	1FM-35	Tone Comp.
C11	.05	600	6537	P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C12	.01	600	6533	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C13	.006	1600	H602	P1688-006		PTE16D6		MB-D6	Buffer Cap.
C14	.5	100	6592	P185-5		GT2P5		68P20	Hash Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CHEVROLET PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500KΩ	½	1219708	Concentrikit			Tone Control - Front
B	500KΩ	½		B13-133 ø			Volume Control - Rear
C	Shaft end			B13-133 ø			Attach per instructions in "Concentrikit"
D	Switch			E-187 ø			Attach per instructions in "Concentrikit"
E	Bushing			76-2 ø			Attach to R1A per instructions
				S-5 ø			

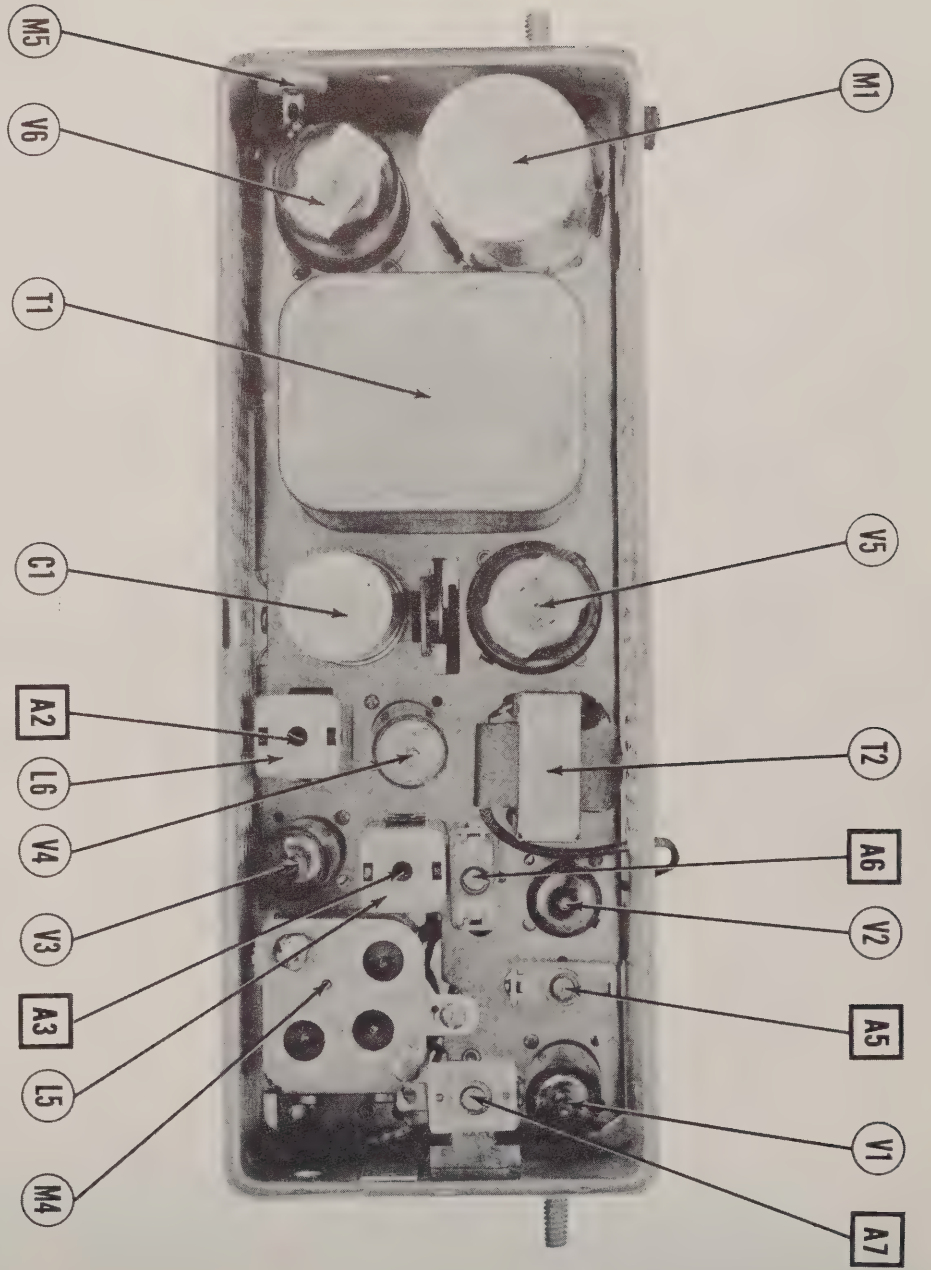
ø Additional parts to be used with "Concentrikit"

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CHEVROLET PART No.	IRC PART No.	
R2	150Ω	½		BTS-150	RF Amp. Cathode - See Note
R3	22KΩ	1	B223	BTA-22K	RF Amp. Plate
R4	1Meg	½	A105	BTS-1Meg	Conv. Grid
R5	22KΩ	½	A223	BTS-22K	Osc. Grid
R6	1Meg	½	A105	BTS-1Meg	AVC Network
R7	1000Ω	½	A102	BTS-1000	IF Amp. Cathode
R8	22KΩ	2	C223	BTB-22K	Screen Dropping
R9	47KΩ	½	A473	BTS-47K	Diode Filter
R10	15Meg	½	A156	BTS-15Meg	AF Amp. Grid
R11	1Meg	½	A105	BTS-1Meg	AF Amp. Plate
R12	220KΩ	½	A224	BTS-220K	Output Grid
R13	270Ω	1	B271	BTA-270	Output Cathode
R14	1800Ω	2	C182	BW-2-1800	Filter - Wire Wound
R15	82Ω	½	1214541		Hash Suppressor
R16	82Ω	½	1214541		Hash Suppressor

Note Some models use 330Ω resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 4A	500VCT .065A			1219711			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6KΩ	3.5Ω	570Ω	.9Ω	1219710		A-3026 ①		① Bend mounting tabs down file ou slots and mount in original holes

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CHEVROLET PART No.	VIKING PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.5Ω	1219709	57J9	57A15	
	CONE DIA.	V. C. DIA.				
SP2	5"X7"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CHEVROLET PART No.		
L1	Ant. Coil	13Ω				Part of Tuner unit Part # 1219701
L2	Ant. Choke	5.2Ω		1218639		
L3	RF Coil	12Ω				Part of Tuner unit Part # 1219701
L4	Osc. Coil	3.4Ω	Tap .2Ω			Part of Tuner unit Part # 1219701
L5	1st. IF	31Ω	31Ω	1219702		
L6	2nd. IF	39Ω	39Ω	1219703		
L7	Hash Choke	.1Ω		1219705		
L8	Hash Choke	.1Ω		1219704		

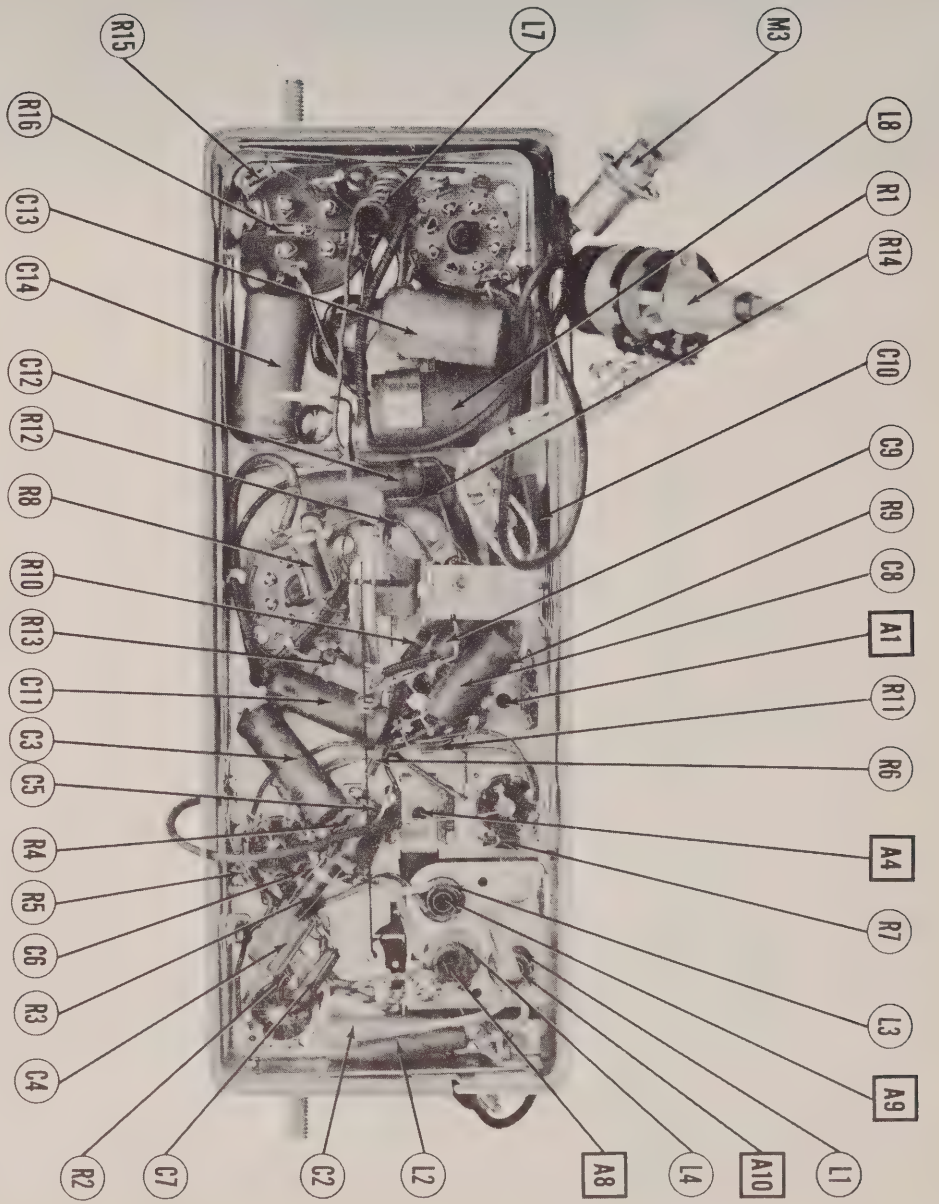
VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				CHEVROLET PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	INT	6.3V	115∿	8542	8542	8542	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CHEVROLET PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	14A	147685		307014		

CHASSIS—BOTTOM VIEW



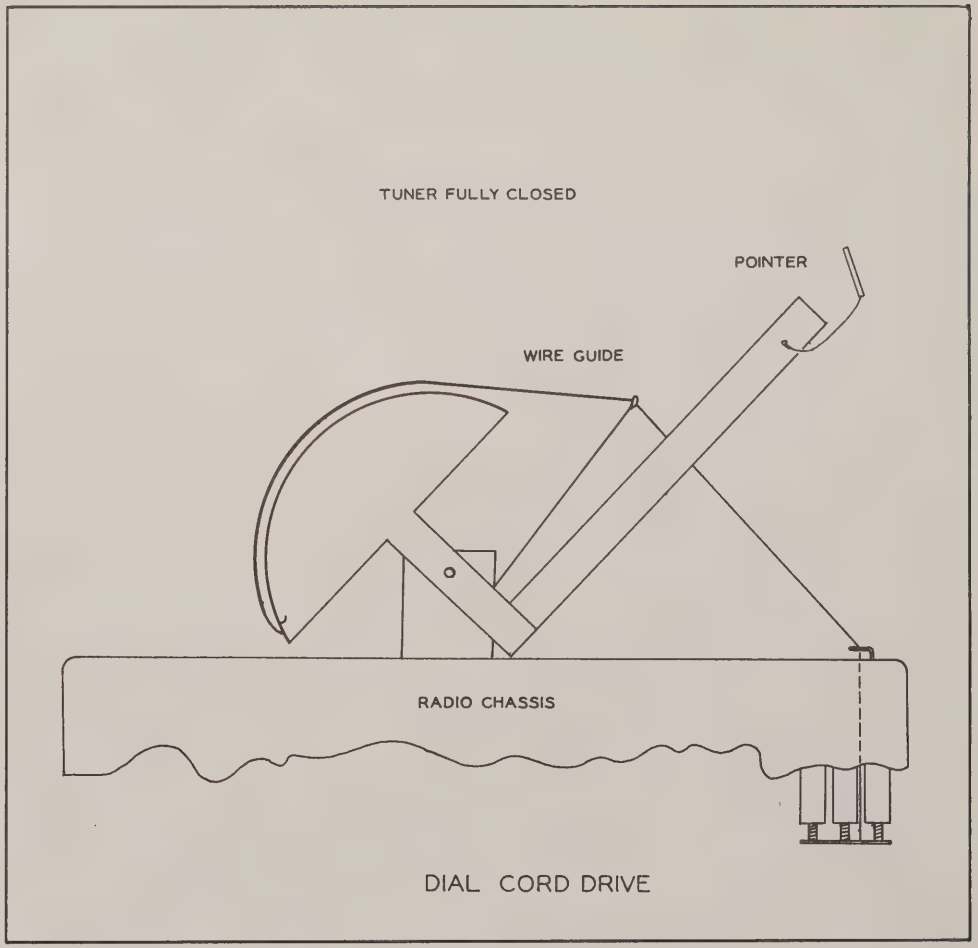
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

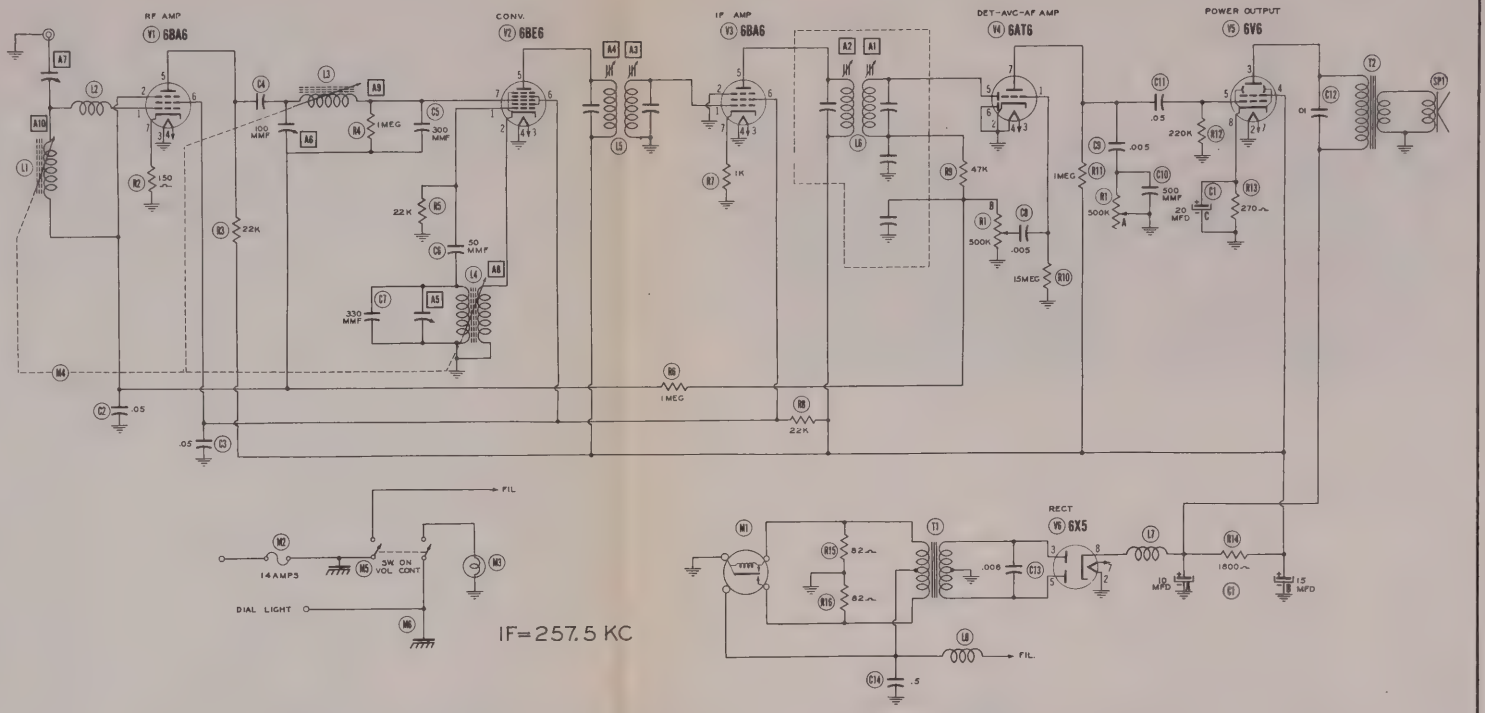
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CHEVROLET PART No.		
M3	Bayonet	6-8	.25	Blue	125588		Type # 41

MISCELLANEOUS

ITEM No.	PART NAME	CHEVROLET PART No.	NOTES
M4	Tuning unit	1219701	
M5	Spark Plate	1219707	
M6	Spark Plate	1219707	(May not be used)
A5	Trimmer	1218635	Osc. Adj.
A6	Trimmer	1218636	RF Adj.
A7	Trimmer	1219706	Ant. Adj.
	Dial Pointer	1219720	
	Dial	1219722	
	Knob	7259734	Dummy
	Knob	7259733	Volume, Tuning
	Knob	7259738	Tone



DIAL CORD DRIVE



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	-.3VDC	-.3VDC	0V	6.3VDC	185VDC	60VDC	.7VDC	
V 2	6BE6	6-3.8VDC	0V	6.3VDC	0V	220VDC	60VDC	-.3VDC	
V 3	6BA6	0V	0V	6.3VDC	0V	220VDC	60VDC	1.7VDC	
V 4	6AT6	-.6VDC	0V	6.3VDC	0V	-.2VDC	0V	46VDC	
V 5	6V6GT	0V	0V	230VDC	220VDC	0V	60VDC	6.3VDC	11.3VDC
V 6	6X5GT	0V	0V	280VAC	0V	280VAC	6.3VDC	6.3VDC	250VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	1.5Meg	1.5Meg	0Ω	.4Ω	†25KΩ	†25KΩ	150Ω	
V 2	6BE6	22KΩ	.3Ω	.4Ω	0Ω	†1.8KΩ	†25KΩ	3.5Meg	
V 3	6BA6	3Ω	0Ω	.4Ω	0Ω	†1.8KΩ	†25KΩ	1KΩ	
V 4	6AT6	15Meg	0Ω	.4Ω	0Ω	150KΩ	0Ω	†1Meg	
V 5	6V6GT	Inf.	0Ω	1570Ω	†1.8KΩ	220KΩ	†25KΩ	.4Ω	270Ω
V 6	6X5GT	Inf.	0Ω	295Ω	Inf.	295Ω	.4Ω	.4Ω	100KΩ

† MEASURED FROM PIN 8 OF V6

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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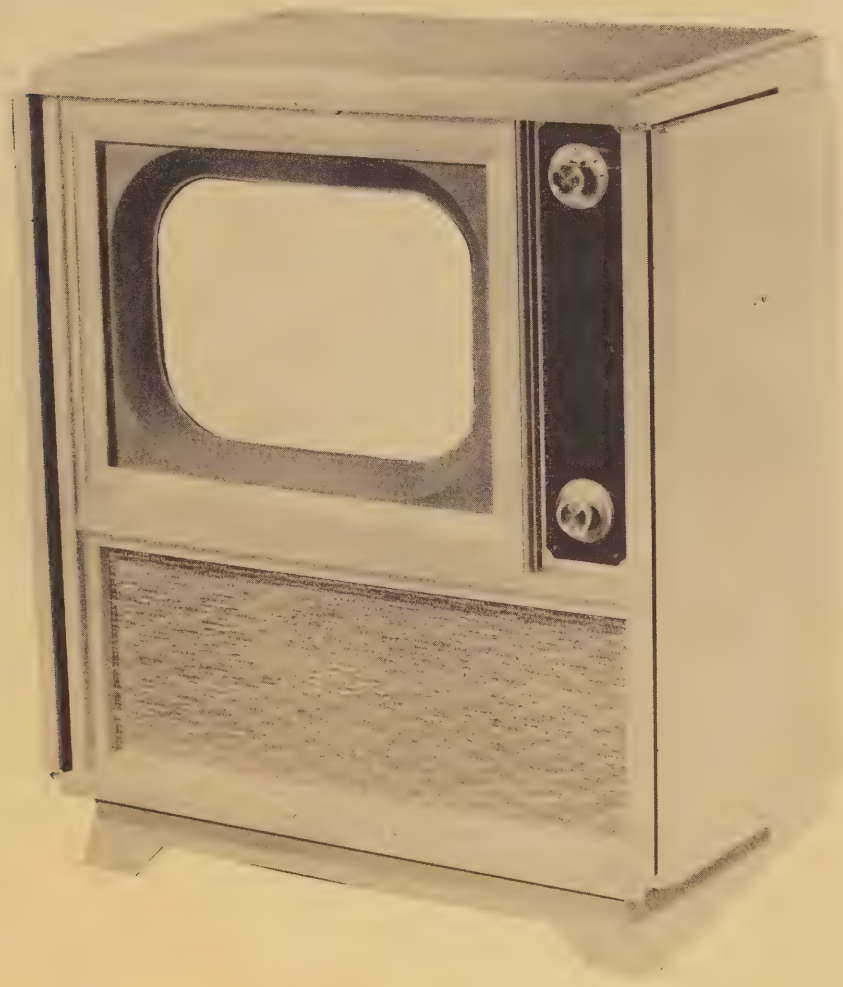

MODEL 890

HOFFMAN MODELS 630 thru 635; 866, A thru 868, A; 870, 871, 872; 876, A thru 878, A; 890, 891, 892

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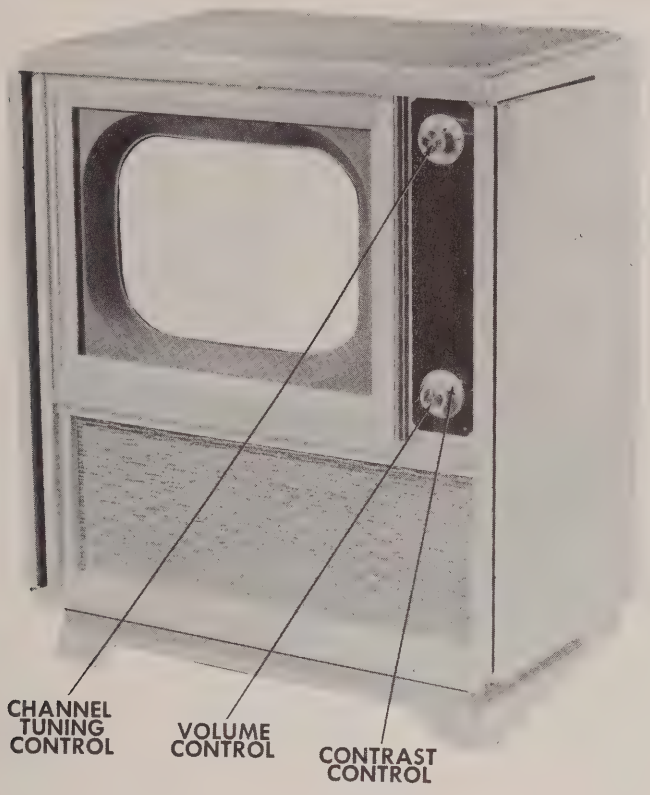

HOFFMAN MODEL 890

TRADE NAME	Hoffman,	MODELS	CHASSIS
		630, 631	170
		632, 633, 634, 635	171
		634A, 635A	171
		866, 867, 868	173
		866A, 867A, 868A	170
		870, 871, 872	171
		876, 877, 878	173
		876A, 877A, 878A	175
		890, 891, 892	173
MANUFACTURER	Hoffman Radio Corp., 3761 S. Hill St., Los Angeles, Calif.		
TYPE SET	Television Receiver		
TUBES	Twenty one		

POWER SUPPLY 110-210 Volts AC 60 Cycle RATING 2 Amp. at 117 Volts AC
TUNING RANGE—CHANNELS 2 thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Description 12, 13, 14
Photographs
Cabinet - Rear View 11
Capacitor and Alignment Identification 4, 9
Photographs (cont.)
Chassis - Top View 3
RF Tuner 10
Resistor and Inductor Identification 15, 16
Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

HOFFMAN MODELS 630 thru 635; 866, A thru 868, A; 870, 871, 872; 876, A thru 878, A; 890, 891, 892

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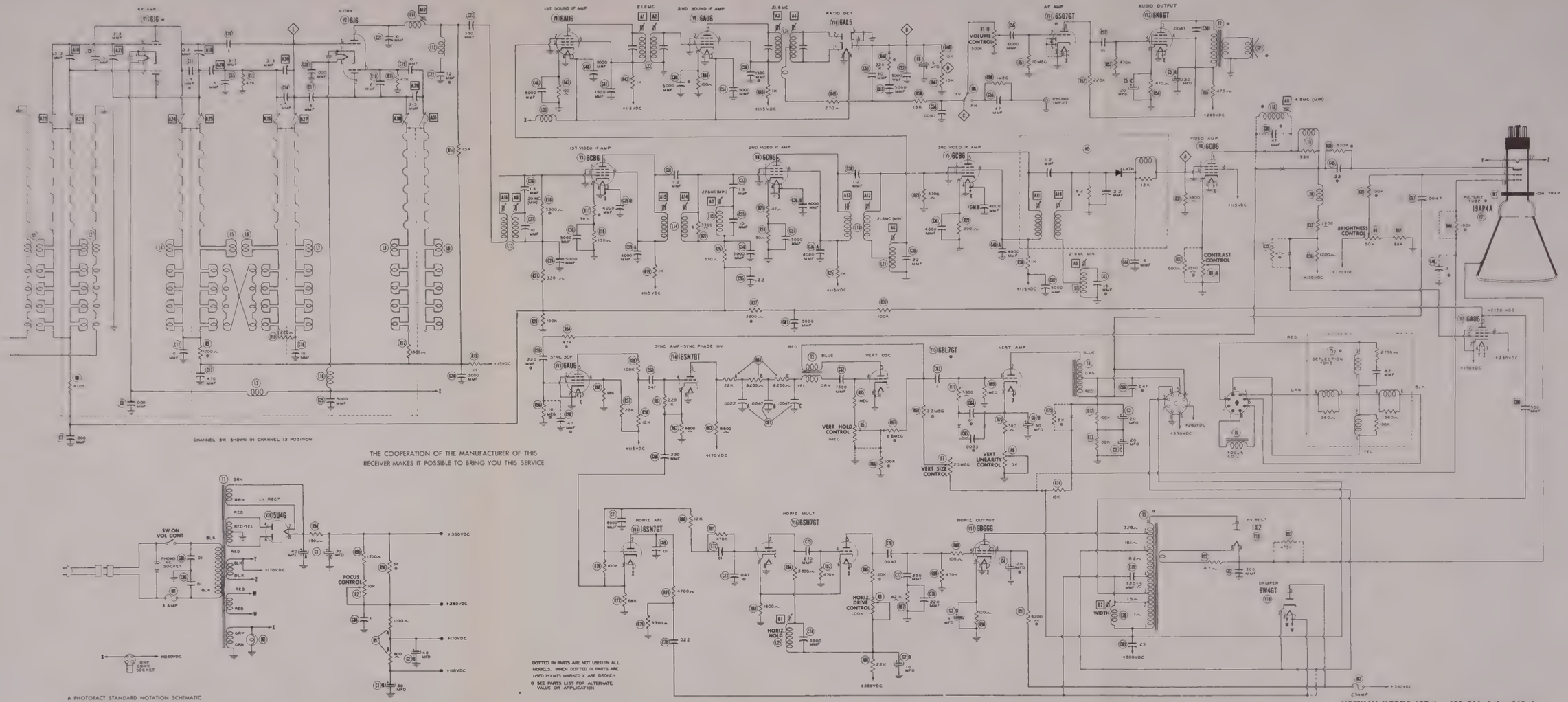

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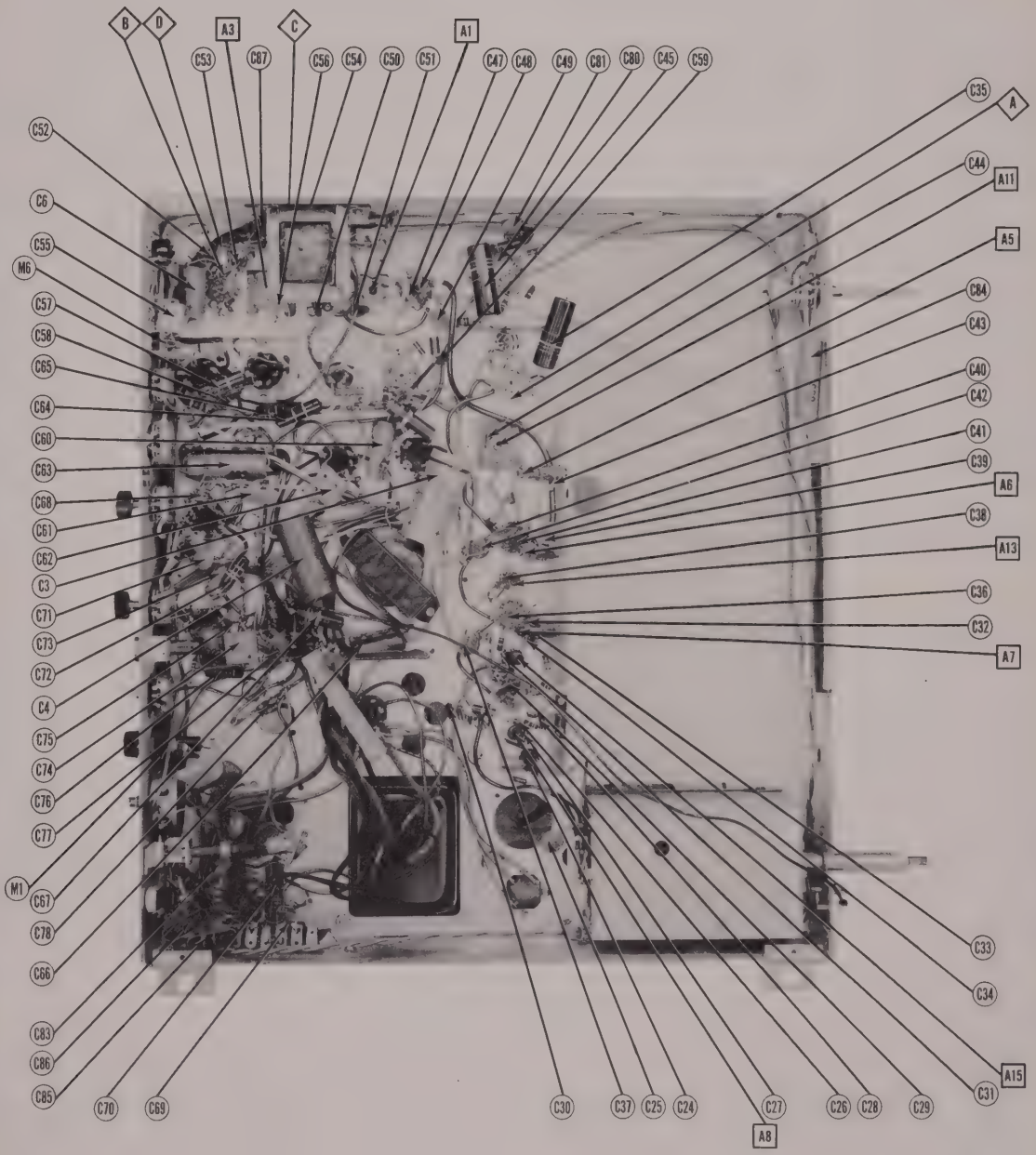
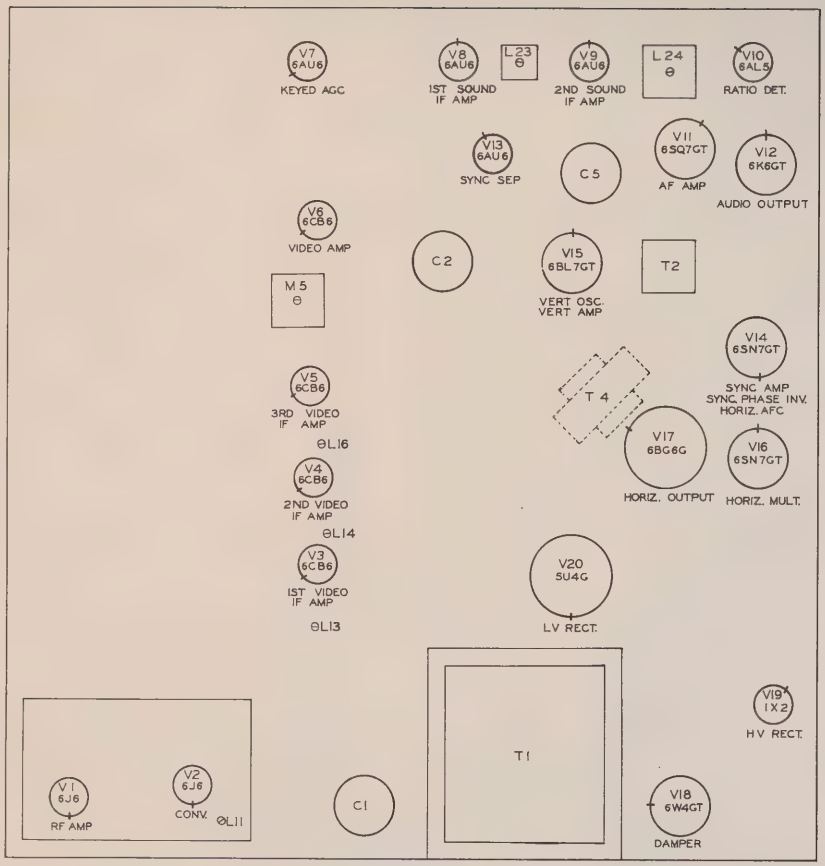
HOFFMAN MODELS 630 thru 635; 866, A thru 868, A; 870, 871, 872; 876, A thru 878, A; 890, 891, 892

CHASSIS TOP VIEW

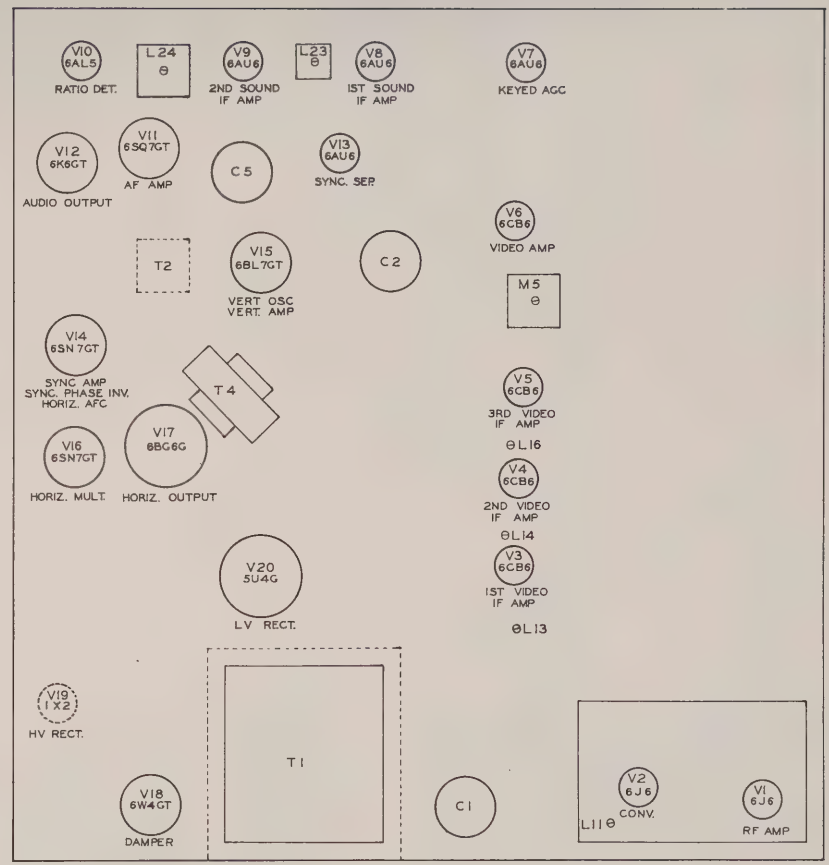


CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION

HOFFMAN MODELS 630 thru 635; 866, A thru 868, A;
870, 871, 872; 876, A thru 878, A; 890, 891, 892



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

HOFFMAN MODELS 630 thru 635; 866, A thru 868, A; 870, 871, 872; 876, A thru 878, A; 890, 891, 892

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V16), from its socket.
Remove the converter tube, (V2), and replace it with a 6J6 which has pin 2 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C35, connect the positive lead to chassis.
Do not operate the set without the deflection yoke plug connected.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to pin 1, (Grid) of 6AU6, (V8). Low side to chassis.	21.6MC	Any	DC Probe to Point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	DC Probe to Point (B). Common to Point (C).	A4	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to pin 1, (Grid) of 6AU6, (V8). Low side to chassis.	21.6MC (450KC SWP)	21.6MC	Any	Vert. Amp. to Point (A). Low side to chassis.	A1, A2, A3	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 1.
2.	"	"	"	"	"	Ver. Amp. to Point (B). Low side to chassis.	A4	Reconnect capacitor C6. Adjust A4 so 21.6 MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A3 for maximum amplitude and straightness of crossover lines.

TRAP ADJUSTMENTS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.005MFD	High side to pin 1, (Grid) of 6CB6, (V5). Low side to chassis.	21.6MC (unmod.)	Any	DC Probe to Point (D). Common to chassis.	A5	Adjust for MINIMUM deflection.
4.	"	High side to pin 1, (Grid) of 6CB6, (V4). Low side to chassis.	"	"	"	A6	"
5.	"	High side to pin 1 (Grid) of 6CB6, (V3). Low side to chassis.	27.6MC	"	"	A7	"
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	20.1MC	"	"	A8	"
7.	.005MFD	High side to pin 1, (Grid) of 6CB6 (V6). Low side to chassis.	4.5MC (unmod.)	Any	DC Probe thru detector (fig. 3), to pin 11 of picture tube. Low side to chassis.	A9	Adjust for MINIMUM deflection. This trap does not appear in all models.

VIDEO IF ALIGNMENT

During each step of video IF alignment, short the primary of the transformer feeding the tube to which the sweep generator is connected.
If any slug shows two peaks, or peaks with the slug turned excessively inward, turn the slug fully out, (counter-clockwise), and adjust clockwise to the first peak.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.005MFD	High side to pin 1, (Grid) of 6CB6, (V5). Low side to chassis.	24.25MC (10MC SWP)	24.25MC	Any	Vert. Amp. to Point (D). Low side to chassis.	A10, A11	Adjust for response curve similar to fig. 4.
9.	"	High side to pin 1 (Grid) of 6CB6 (V4). Low side to chassis.	"	"	"	"	A12, A13	"
10.	"	High side to pin1, (Grid) of 6CB6 (V3). Low side to chassis.	"	"	"	"	A14, A15	"
11.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	"	21.6MC 26.1MC 27.6MC	"	"	A16, A17	Adjust for response curve similar to fig. 5. Do not readjust A10 thru A15.

TUNER ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Remove the 3 volt bias battery and replace it with 1½ volts bias.
Fasten a piece of wire to the chassis to use a tuning index.
The index end of the wire should be centered over the tuning shaft.
Replace the tuning knobs.

FIG. 1

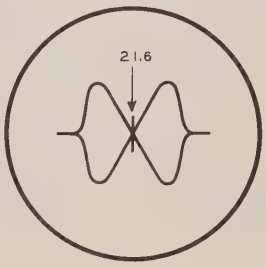


FIG. 2

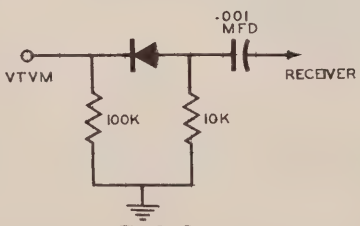


FIG. 3

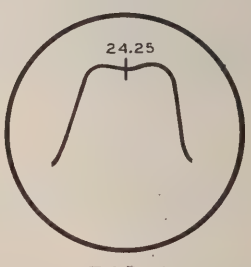


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω carbon resistor	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6	Vert. Amp. thru 10KΩ to Point (E), (Screw of A19). Low side to chassis.	A18, A19, A20	Adjust for response curve similar to fig. 6.
13.	"	"	"	"	"	"	A21	Adjust for proper neutralization. Extreme cases of improper meutralizing will cause the RF amplifier to oscillate, which will appear as "grass" on the scope. Lesser desrees of improper neutralizing will appear as a peak on one or the other sides of the response curve. See figs. 7 and 7A for examples of improper neutralizing.
14.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13		A22, A23 A24, A25 A26, A27	Adjust the high band loop slide bars for maximum amplitude and symmetry as per fig. 6. Both sliders of any one section should be maintained at approximately the same relative position.
15.	"	"	"	"	"	"	A28	Adjust for proper band width of response.
16.	"	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"	A18, A19 A20	Adjust for maximum amplitude and symmetry of response curve. If necessary retouch A28 for proper band width. Recheck channel 13. For best results it is recommended that steps 14, 13, and 16 be repeated.
17.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	L1, L2, L4, L5, L6, L7	Check to see if proper response curve can be obtained with the slide contacts within the center 1/3 of the channel segment on the printed lines. If not set dial to exactly channel 6 and expand or compress the turns of the "jump" coils for proper response. The order of adjustment should be L1, L2, L4, L7, L5, and L6. L5 and L6 are coupling coils and should be adjusted for proper band width.
18.	"	"	57MC (10MC SWP)	55.25MC 59.75MC	2	"		Check to see if the response curve is within the limits shown in fig. 8 If not, make slight compromise adjustments of A18 and A21. Recheck All channels for response within the limits of fig. 8. If necessary make compromise adjustments which will result in all channels falling within the limits of fig. 8.

OSCILLATOR ALIGNMENT

Two markers are required to align the oscillator in this tuner.
The second marker is set to the video IF frequency (21.6MC) and is fed through an isolation network to Point (E), (screw of A19). The isolation network consists of a 220MMF. capacitor in series with a 1000Ω or larger resistor. Use the largest value of resistance, which will permit a minimum usuable marker indication.
The frequency of the first generator, (usually built into the sweep generator) will be indicated by an asterisk(*) in the table. The second marker generator frequency, (21.1MC) will be indicated by a dagger (†).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω carbon resistor	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	*83.25MC †26.1MC	6	Vert. Amp. thru 10KΩ to Point (E). Low side to chassis.	A29	Adjust A29 until markers coincide on response curve.
20.	"	"	213MC (10MC SWP)	*211.25MC †26.1MC	13	"	A30, A31	Adjust sliders until markers coincide. The sliders should be maintained at approximately the same relative position.
21.	"	"	85MC (10MC SWP)	83.25MC 26.1MC	6	"	L8, L9	Expand or compress coil turns until markers coincide.
22.	"	"	57MC (10MC SWP)	55.25MC 26.1MC	2	"		Check to see if markers coincide with slider contacts near the center of the channel 2 segment. If not compromise adjustment of the "jump" coils L8 and L9 will be required

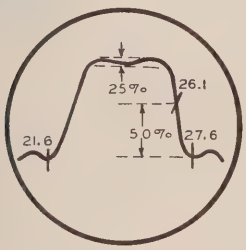


FIG.5

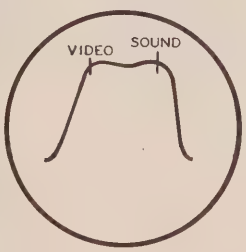


FIG.6

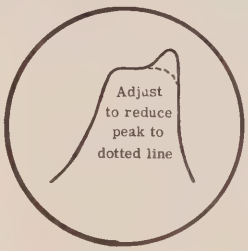


FIG.7

FIG.7A

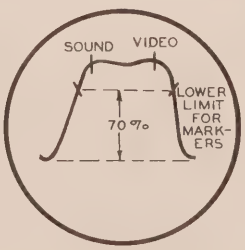


FIG.8

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	80VDC	80VDC	6.3VAC	0V	-.9VDC	-.9VDC	0V		
V 2	6J6	56VDC	85VDC	0V	6.3VAC	§-3.7VDC	-1VDC	0V		
V 3	6CB6	-.1VDC	1.2VDC	6.3VAC	0V	105VDC	105VDC	0V		
V 4	6CB6	-.1VDC	1.5VDC	6.3VAC	0V	105VDC	105VDC	0V		
V 5	6CB6	0V	1.5VDC	6.3VAC	0V	105VDC	105VDC	0V		
V 6	6CB6	0V	1.1VDC	6.3VAC	0V	115VDC	120VDC	0V		
V 7	6AU6	155VDC	170VDC	▲6.3VAC	▲0V	-.3VDC	260VDC	170VDC		
V 8	6AU6	0V	0V	6.3VAC	0V	105VDC	105VDC	.9VDC		
V 9	6AU6	0V	0V	6.3VAC	0V	105VDC	105VDC	.9VDC		
V 10	6AL5	-.4VDC	-.1VDC	0V	6.3VAC	0V	0V	-.6VDC		
V 11	6SQ7GT	0V	-.4VDC	0V	-1.4VDC	-1.4VDC	115VDC	6.3VAC	0V	
V 12	6K6GT	0V	6.3VAC	235VDC	245VDC	0V	260VDC	0V	16VDC	
V 13	6AU6	-1.5VDC	0V	6.3VAC	0V	95VDC	53VDC	0V		
V 14	6SN7GT	-2VDC	-.1VDC	.2VDC	7.4VDC	120VDC	50VDC	6.3VAC	0V	
V 15	6BL7GT	§1.3VDC	380VDC	30VDC	§-32VDC	85VDC	0V	6.3VAC	0V	
V 16	6SN7GT	§-2.5VDC	235VDC	7.3VDC	§-7.2VDC	125VDC	7.3VDC	6.3VAC	0V	
V 17	6BG6G	0V	0V	12VDC	-20VDC	-20VDC	0V	6.3VAC	280VDC	Top Cap *
V 18	6W4GT	0V	0V	580VDC	580VDC	350VDC	0V	580VDC	580VDC	
V 19	1X2	* DO NOT MEASURE								Top Cap *
V 20	5U4G	0V	385VDC	170VDC	360VAC	0V	360VAC	0V	385VDC	
V 21	19AP4A	▲0V	145VDC	PIN 10 400VDC	PIN 11 165VDC	PIN 12 ▲6.3VAC	H.V. CONNECTOR ** 10K.V.			

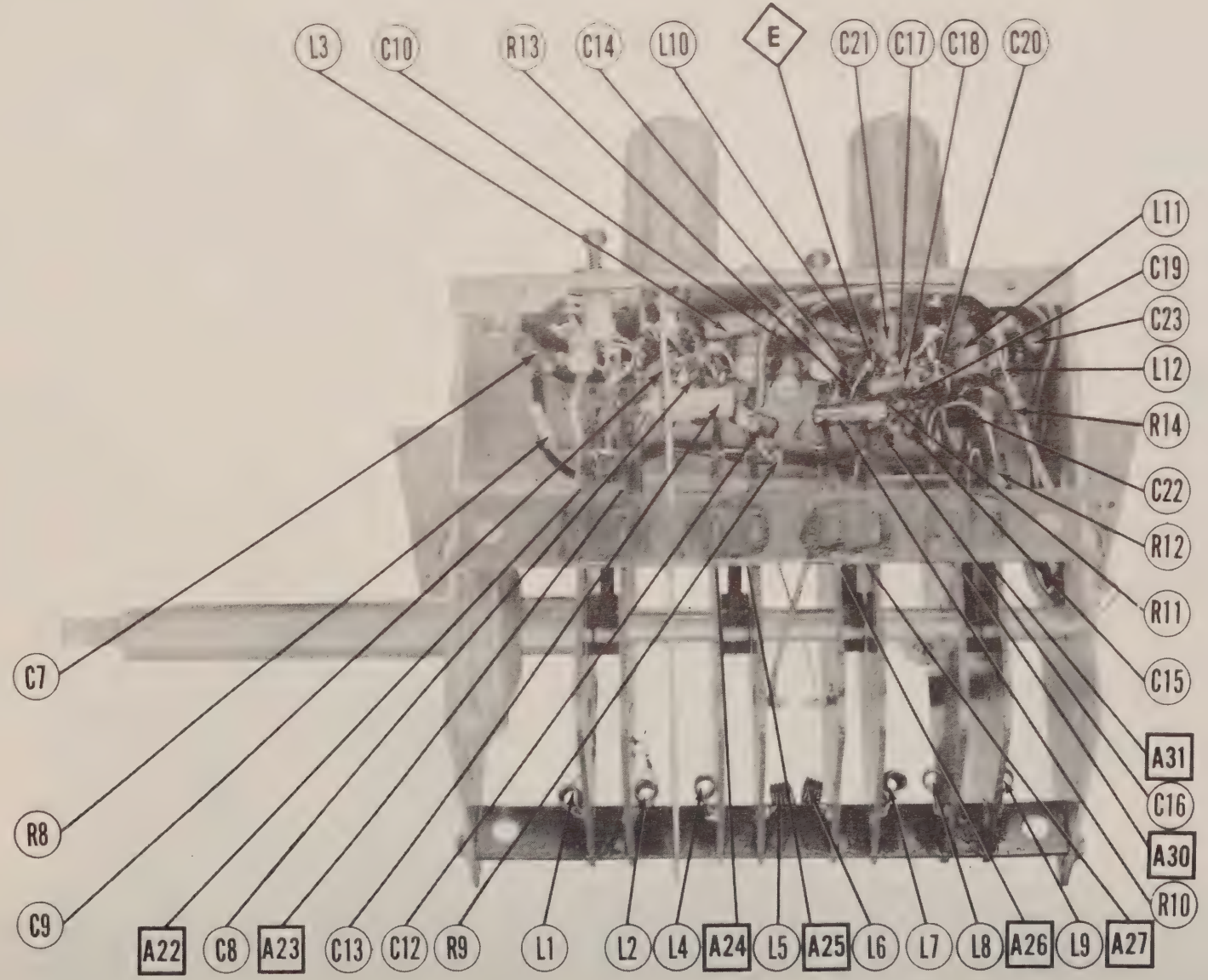
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE CONNECTED
ALL CONTROLS SET FOR NORMAL OPERATION
T.V.-PHONO SWITCH IN T.V. POSITION
▲ MEASURED FROM 170VDC LINE
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†5KΩ	†5KΩ	.1Ω	0Ω	570KΩ	570KΩ	0Ω		
V 2	6J6	†18KΩ	†5.3KΩ	0Ω	.1Ω	47KΩ	47KΩ	0Ω		
V 3	6CB6	100KΩ	190Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 4	6CB6	100KΩ	200Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 5	6CB6	.3Ω	200Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 6	6CB6	1.9KΩ	140Ω	.1Ω	0Ω	†7KΩ	†2.8KΩ	0Ω		
V 7	6AU6	†3.1KΩ	†1.9KΩ	▲.2Ω	▲0Ω	200KΩ	†800Ω	†1.9KΩ		
V 8	6AU6	.1Ω	0Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	100Ω		
V 9	6AU6	.1Ω	0Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	100Ω		
V 10	6AL5	500KΩ	500KΩ	0Ω	.1Ω	0Ω	0Ω	20KΩ		
V 11	6SQ7GT	0Ω	10Meg	0Ω	Inf.	Inf.	†220KΩ	.1Ω	0Ω	
V 12	6K6GT	Inf.	.1Ω	†1.6KΩ	†1.2KΩ	470KΩ	†800Ω	0Ω	470Ω	
V 13	6AU6	10Meg	0Ω	.1Ω	0Ω	†114KΩ	†16KΩ	0Ω		
V 14	6SN7GT	168KΩ	8KΩ	68KΩ	220KΩ	†8.5KΩ	6.8KΩ	.1Ω	0Ω	
V 15	6BL7GT	1Meg	#11KΩ	1.9KΩ	1.5Meg	#2.4Meg	0Ω	.1Ω	0Ω	
V 16	6SN7GT	650KΩ	†28KΩ	1.8KΩ	470KΩ	†240KΩ	1.8KΩ	.1Ω	0Ω	
V 17	6BG6G	Inf.	0Ω	120Ω	470KΩ	470KΩ	Inf.	.1Ω	†8.3KΩ	Top Cap #290Ω
V 18	6W4GT	Inf.	Inf.	180KΩ	#0Ω	†150Ω	Inf.	#7.5Ω	#7.5Ω	
V 19	1X2	PINS 1-9 HAVE INF. RESISTANCE								Top Cap #300Ω
V 20	5U4G	Inf.	30KΩ	†2KΩ	27Ω	Inf.	28Ω	Inf.	30KΩ	
V 21	19AP4A	▲0Ω	†135KΩ	PIN 10 #110KΩ	PIN 11 †330KΩ	PIN 12 ▲.2Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE CONNECTED
TV-PHONO SWITCH IN TV POSITION
† MEASURED FROM PIN 8 OF V20
# MEASURED FROM PIN 3 OF V18
▲ MEASURED FROM 170VDC LINE
ALL CONTROLS SET FOR NORMAL OPERATION

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.


L3
C10
R13
C14
L10
E
C21
C17
C18
C20
L11
C19
C23
L12
R14
C22
R12
R11
C15
A31
C16
A30
R10
C7
R8
C9
A22
C8
A23
C13
C12
R9
L1
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L5
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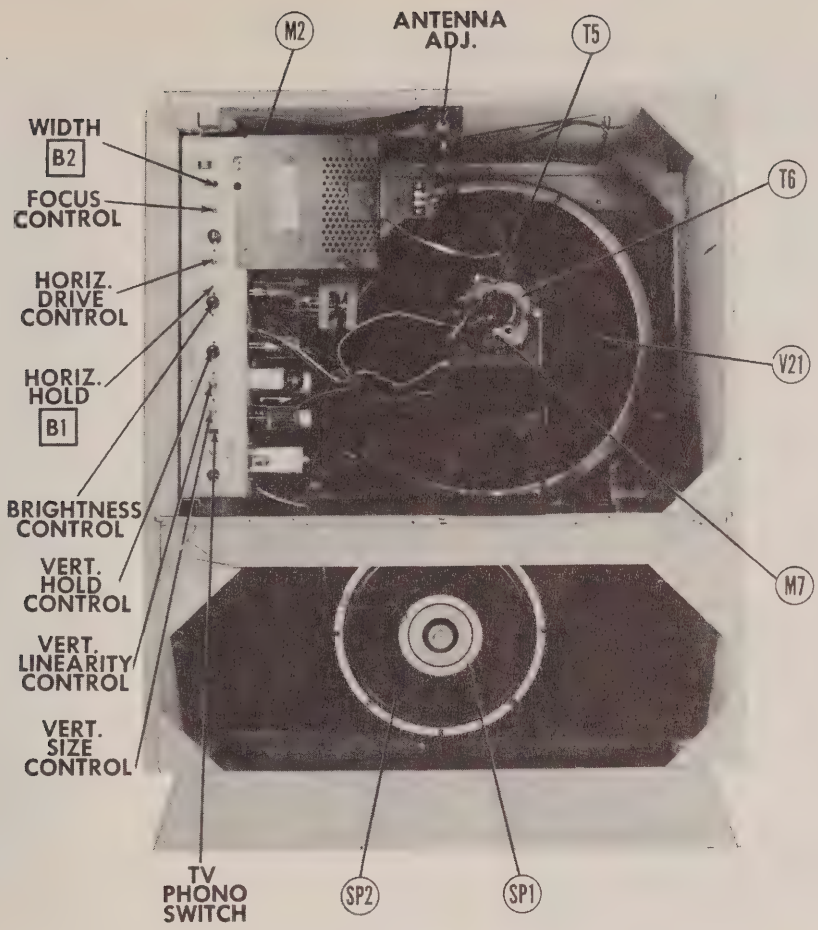
A26
L9
A27

RF TUNER



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold control until the picture synchronizes horizontally.

Turn the horizontal drive control counter-clockwise until a bright vertical line appears in the picture, and then clockwise just enough to remove the vertical line. If the vertical line connot be obtained, leave the control fully counter-clockwise.

Adjust the horizontal size slug, (B1), until the picture slightly wider than necessary to fill the mask horizontally.

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove five wood screws from rear cover.
3. Disconnect built-in antenna.
4. Disconnect picture tube socket.
5. Disconnect yoke plug.
6. Disconnect high voltage lead.
7. Disconnect speaker.
8. Remove four 7/16" hex head bolts from chassis. Remove chassis.
9. Remove four metal screws from speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6J6	6J6	7B9	
B	RF Amplifier	6AG5	6AG5	7BD	
C	RF Amplifier	6CB6	6CB6	7CM	
D	RF Amplifier	6BC5	6BC5	7DD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp	6CB6	6CB6	7CM	
V5	3rd Video IF Amp	6CB6	6CB6	7BM	
V6	Video Amplifier	6CB6	6CB6	7BM	
V7	Keyed AGC	6AU6	6AU6	7BK	
V8	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V9	2nd. Sound IF Amp	6AU6	6AU6	7BK	
V10	Video Detector	6AL5	6AL5	6BT	
V11A	AF Amplifier	6SN7GT	6N7GT	9Q	
B	AF Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	6K6GT	6K6GT	7S	
V13	Sync. Separator	6K6GT	6K6GT	7S	
V14	Sync. Amplifier-Sync. Phase Inv.-Horizontal AFC	6SN7GT	6SN7GT	8BD	
V15 A	Vert. Oscillator-Vert. Amplifier	6BL7GT	6BL7GT	8BD	
B	Vert. Oscillator-Vert. Amplifier	12BH7	12BH7	9A	
V16	Horizontal Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BG6G	6BG6G	5BT	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1X2	1X2	9Y	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: HOFFMAN PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
21A	18AP4A	18AP4A		12D	Chassis 175
B	14CP4	14CP4	14CP4	12D	Chassis 170
C	16TP4	16KP4 ③	16KP4 ③	12D	Chassis 171 ⑤ Space permitting
D	17BP4	17BP4		12D	Chassis 173
E	16KP4	16KP4	16KP4	12D	Chassis 171
F	16RP4	16RP4	16KP4	12D	Chassis 171

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475	4232			UPT44445		TVL-3843	▲ Filter
B	30	475							■ Decoupling
C	30	475							▲ Filter
C2A	10	475	4228	AFH4-94		UPT407		TVL-4822	▲ Horiz. MV Decoupling
B	40	475		PRS150/4				TVA-1303	■ Decoupling
C	30	450							▲ Vert. Amp. Decoupling
D	5	50							Horiz. Output Cathode
C3	30	450	4227	PR8450/20		BR2045A		TVA-1709	Vert. Amp. Decoupling
C4	30	450	4227	PR8450/20		BR2045A		TVA-1709	Horiz. Output Screen ††
C5A	30	475	4230			UP2045C		TVL-1810	■ Audio Output Dec.
B	50	50				BR505		TVA-1308	▲ Vert. Amp. Cathode
C	20	25						TVA-1205	Audio Output Cathode
C6	5	50	4209	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C7	10000			SU1000	D6-102		GP2L-102	5HK-D1	AGC Filter
C8	1000			SU1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C9	1.5		4083	SIL. 5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C10	.5				TCZ-.5		NP0K-R50		RF Coupling
C11	1.5		4083	SIL. 5NP0	TCZ-1.5		NP0K 1R5		RF Coupling *
C12	10			SU0N750	TCN-10		N750K-100	5TCU-Q1	RF Amp. Plate
C13	470			SI470	D6-471		GP2K-471	5GA-T47	RF Bypass
C14	1.5			SIL. 5NP0	TCZ-1.5		NP0K-1R5		RF Coupling
C15	5		4028	SI5N750			N570K-050		Fixed Trimmer
C16	10			SI10	D6-100		GP1K-100	5GA-Q1	Mixer Grid Cap.
C17	15				TCZ-15		NP0K-150	5TCC-Q15	Osc. Coupling
C18	3				TCZ-3.2		NP0K-020		Osc. Feedback
C19	10		4027	SU0NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C20	1000			SU1000	D6-102		GP2L-102	5HK-D1	Conv. Fil.
C21	10			SI10	D6-100		GP1K-100	5GA-Q1	Fixed Trimmer
C22	72	500		1469-00007		5R5Q7		MS-47	Fixed Trimmer †
C23	330			SI330	D6-331		GP2K-331	5GA-T33	IF Coupling
C24	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	RF Bypass
C25	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	Fil. Bypass
C26	1.5		4083	SIL. 5NP0	TCZ-1.5		NP0K-1R5		IF Coupling
C27	10		4027	SU0NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C28	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	AGC Filter
C29A	4000		4036	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	1st. Video IF Dec.
B	4000				D6-402	1D5D4			1st. Video IF Fil.
C30	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	1st. Video IF Cathode
C31	1.2		4074				NP0K-1R2		IF Coupling
C32	1.5		4083	SIL. 5NP0	TCZ-1.5		NP0K-1R5		IF Coupling
C33	10		4027	SU0NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C34	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	AGC Filter
C35	.33	400	4131	P488-33		GT4P2		4TM-P22	AGC Filter
C36A	4000		4036	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	2nd. Video IF Dec.
B	4000				D6-402	1D5D4			2nd. Video IF Fil.
C37	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	2nd Video IF Cathode
C38	1.2		4074				NP0K-1R2		IF Coupling
C39	33			SI33	D6-330	5W5Q2	GP1K-220	5GA-Q33	Fixed Trimmer
C40A	4000		4036	BPD-2X004	D6-402	1D5D4	822-004	5HK-2D4	3rd. Video IF Dec.
B	4000				D6-402	1D5D4			3rd. Video IF Fil.
C41	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	3rd. Video IF Cathode
C42	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	RF Bypass
C43	15			SI15	D6-150		GP1K-150	5GA-Q15	Fixed Trimmer †
C44	5		4028	SI5N750			N750K-050		Video Det. Filter
C45	.22	400	4131	P488-22		GT4P2		4TM-P22	Video Coupling †
C46	.1	600	4144	P688-1	DF-104	PTE6P1		6TM-P1	Accelerating Anode Dec. *

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C47	1500		4090	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	1st Sound IF Dec.
C48	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	1st Sound IF Cathode
C49	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	1st Sound IF Fil.
C50	1500			SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd Sound IF Dec. †
C51	5000		4029	BPD-005	DD-502	DD-502	81L-005	5HK-D5	2nd Sound IF Fil.
C52	5000		4029	BPD-005	DD-502	DD6502	81L-005	5HK-D5	RF Bypass
C53	30		4043		TCZ-30		NP0L-300		Balancing
C54	.0047	400	4127		P688 0047	D6-472	GP2-333-472	6TM-D47	De-emphasis
C55	47	500	4069		1468-00005	5W5Q5	GP1K-470	1FM-45	Phono Tone Comp.
C56	5000		4029	BPD-005	DD-502	1D5D5	81L-005	5HK-D5	Audio Coupling
C57	.01	600	4105		P688-01	D6-103	GP2-333-103	6TM-S1	Audio Coupling
C58	.0047	800	4128		P688-0047	D6-472	GP2-333-472	6TM-D47	Audio Output Plate
C59	220		4026		S1220	5W5T25	GP2K-221	5GA-T22	Sync. Coupling † †
C60	.047	800	4133		P688-047	DF-503	PTE685	6TM-S47	Sync. Coupling
C61A	.0022				P688-0022		PTE6D2	GP2-333-222	Vert. Integrator Net.
B	.0047			▲0068	P688-0047	▲PC-100	PTE6D5	GP2-333-472	Vert. Integrator Net.
C	.0047				P688-0047		PTE6D5	GP2-333-472	Vert. Integrator Net.
C62	7500	500	4083						Vert. Osc. Grid
C63	.1	600	4144		P688-1	DF-104	PTE6P1	6TM-P1	Vert. Sweep Coupling
C64	.01	600	4105		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Discharge † †
C65	.0033				P688-0033	D6-332	PTE6D3	GP2-333-332	6TM-D3	Vert. Discharge *
C66	.047	600	4133		P688-047	DF-503	PTE685		6TM-S47	Fixed Trimmer *
C67	.0047	1000	4149		P1088-0047		PTE16D5		MB-D47	Vert. Sweep Coupling
C68	330		4010		S1330	D6-331		GP2K-331	5GA-T33	Horiz. Sync. Coupling
C69	.01	400	4105		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AFC Plate
C70	.022	1000	4135		P1088-022		PTE16S2		MB-S22	Horiz. Feedback
C71	5000		4029		BPD-005	DD-502	1D5D5	81L-005	5HK-D5	AFC Filter
C72	.01	400	4105		P488-01	D6-103	PTE4S1	GP2-333-103	6TM-S1	AFC Filter
C73	.047	600	4133		P688-047	DF-503	PTE685		6TM-S47	AFC Filter † †
C74	3900	500	4085		1464-004		1DR5D4			Fixed Trimmer
C75	270	500	4022		1468-00025	D6- 271	5W5T25	GP2K-271	1FM-325	Horiz. MV Feedback
C76	.0047	600	4128		P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Horiz. Sweep Coupling
C77	250	500	4086		1468-00025	D6-251	5W5T25	GP2K-251	1FM-325	Horiz. Discharge
C78	220		4026		S1220	D6-221	5W5T25	5GA-T22	Horiz. Discharge
C79	520	1500	4076						Horiz. Feedback
C80	500	1000	4075						Horiz. Feedback
C81	5000		4029		BPD-005	DD-502	1D5D5	81L-005	5HK-D5	AGC Filter
C82	500	20000	4056		HV-20C	TV3-502				HV Filter
C83	.25	600	4129		684-25		GP2P25		8TM-P25	RF Bypass
C84	.1	600	4144		P688-1	DF-104	PTE8P1		8TM-P1	RF Bypass
C85	.01	600	4105		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C86	.01	600	4105		P688-01	D6-103	PTE8S1	GP2-333-103	6TM-S1	Line Filter
C87	5000		4029		BPD-005	DD-502	1D5D5	81L-005	5HK-D5	RF Bypass *
C88	5000		4029		BPD-005	DD-502	1D5D5	81L-005	5HK-D5	2nd Sound IF Cathode *
C89	47				SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Fixed Trimmer *
C90	47				SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Sync. Sep. Grid *

* Not used in all models.
† Some models use 135MMF in this application.
‡ Some models use 10MMF in this application.
§ Some models use 5000MMF in this application.
†† Some models use .001MFD in this application.
‡‡ Some models use .047MFD in this application.
¶ ¶ Some models use .1MFD in this application.
● Items C61A, C61B, C61C, R64A, R64B, R64C are combined into one unit in some models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	150Ω		4833		RTV-247	SBB-626-S	Contrast Control
B	500KΩ						Volume Control and SW
R2	10KΩ	4	4834		RTV-186	VK-137	Focus Control - Wire Wound
R3A	100KΩ		4835	Q11-128	AG-46-8	AN-49	Horiz. Drive Control
B	Shaft		Not req.	Not req.	FSK-1/4	AK-1	Attach to R3A per instructions
R4A	50KΩ		4831	Q11-123	AG-44-8	AN-31	Brightness Control
B	Shaft		Not req.	Not req.	FSK-1/4	AK-1	Attach to R4A per instructions
R5A	1Meg		4832	Q11-137	AG-51-8	AN-69	Vertical Hold Control
B	Shaft		Not req.	Not req.	KS6-3	AK-1	Attach to R5A per instructions
R6A	5000Ω		4820	Q11-114	AG-10-8	AN-10	Vertical Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	2.5Meg		4821	Q11-239	AG-84-8	AN-83	Vertical Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R7A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R8	470KΩ 20%		4506	BTS-470K	RF Amp. Grid
R9	1200Ω		4553	BTS-1200	RF Amp. Plate Decoupling - See Note 2
R10	220Ω 20%				Parasitic Suppressor
R11	47KΩ 20%		4504	BTS-47K	Osc. Grid
R12	1500Ω 20%			BTS-1500	Osc. Anode
R13	47KΩ 20%		4504	BTS-47K	Mixer Grid
R14	15KΩ 20%		4521	BTS-15K	Mixer Plate
R15	1000Ω 20%		4542	BTS-1000	Decoupling
R16	3300Ω		4648	BTS-3300	1st. Video IF Amp. Grid - See Note 3
R17	39Ω		4620		1st. Video IF Amp. Cathode - See Note 4
R18	150Ω		4616	BTS-150	1st. Video IF Amp. Cathode
R19	1000Ω 20%		4542	BTS-1000	1st. Video IF Amp. Decoupling
R20	100KΩ 20%		4511	BTS-100K	AGC Network
R21	330Ω 20%		4509	BTS-330	AGC Network
R22	3300Ω		4648	BTS-3300	2nd. Video IF Transformer Shunt - See Note 3
R23	47Ω		4639		2nd. Video IF Amp. Cathode
R24	150Ω		4616	BTS-150	2nd. Video IF Amp. Cathode
R25	1000Ω 20%		4542	BTS-1000	2nd. Video IF Amp. Decoupling
R26	330Ω 20%		4509	BTS-330	AGC Network
R27	3900Ω			BTS-3900	AGC Network - See Note 5
R28	3300Ω		4648	BTS-3300	3rd. Video IF Amp. Grid
R29	200Ω		4642	BTS-220	3rd. Video IF Amp. Cathode
R30	1000Ω 20%		4542	BTS-1000	3rd. Video IF Amp. Decoupling
R31	5600Ω 5%		4603		Video Amp. Grid
R32	680Ω			BTS-680	Contrast Control Shunt - See Note 1
R33	3900Ω 5%		4854		Video Amp. Plate
R34	47KΩ 20%		4504	BTS-47K	Isolation - See Note 6
R35	47KΩ			BTS-47K	Isolation - See Note 1

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R36	1200Ω	5%	4553	BTS-1200	Voltage Divider
R37	100KΩ	20%	4511	BTS-100K	Keyed AGC Plate
R38	330KΩ		4677	BTS-330K	Isolation - See Note 7
R39	100KΩ	20%	4511	BTS-100K	Picture Tube Grid - See Note 8
R40	100KΩ	20%	4511	BTS-100K	Acc. Anode Load - See Note 1
R41	68KΩ	20%	4661	BTS-68K	Voltage Divider
R42	100Ω		4666	BTS-100	1st. Sound IF Amp. Cathode
R43	1000Ω	20%	4542	BTS-1000	1st. Sound IF Amp. Decoupling
R44	100Ω		4586	BTS-100	2nd. Sound IF Amp. Cathode
R45	1000Ω	20%	4542	BTS-1000	2nd. Sound IF Amp. Decoupling
R46	10KΩ	20%	4597	BTS-10K	Ratio Detector Diode Load
R47	10KΩ	20%	4597	BTS-10K	Ratio Detector Diode Load
R48	270Ω			BTS-270K	Voltage Divider-See Note 1
R49	270Ω		4663	BTS-270	Balancing
R50	15KΩ	20%	4521	BTS-15K	De-emphasis
R51	10Meg	30%	4505	BTS-10Meg	AF Amp. Grid
R52	220KΩ		4618	BTS-220K	AF Amp. Plate
R53	470KΩ	20%	4506	BTS-470K	Output Grid
R54	470Ω			BTA-470	Output Cathode
R55	470Ω			BTA-470	Decoupling
R56	10Meg	20%	4505	BTS-10Meg	Sync. Separator Grid-See Note 9
R57	22KΩ		4618	BTS-22K	Sync. Separator Screen
C58	12KΩ	20%	4660	BTS-12K	Sync. Separator Plate
R59	100KΩ	20%	4511	BTS-100K	Sync. Separator Plate
R60	18KΩ		4682	BTS-18K	Voltage Divider
R61	220KΩ		4618	BTS-220K	Sync. Amp. Grid
R62	6800Ω	20%	4557	BTS-6800	Sync. Amp. Cathode
R63	6800Ω	20%	4557	BTS-6800	Sync. Amp. Plate
R64A	22KΩ			BTS-22K	Integrator
B	820KΩ		427	BTS-8200	Integrator
C	82000Ω			BTS-8200	Integrator
R65	1Meg		4614	BTS-1Meg	Vertical Osc. Grid
R66	100KΩ			BTS-100K	Vertical Osc. Grid-See Note 1
R67	6.8Meg			BTS-6.8Meg	Voltage Divider-See Note 1
R68	3.3Meg		4643	BTS-3.3Meg	Vertical Osc. Plate-See Note 10
R69	1Meg	20%	4513	BTS-1Meg	Vertical Amp. Grid
R70	560Ω			BTA-560	Vertical Amp. Cathode
R71	3300Ω		4607	BTS-3300	Vertical Peaking
R72	100KΩ		4511	BTS-100K	Voltage Divider
R73	100KΩ		4511	BTS-100K	Voltage Divider
R74	10KΩ		4737		Decoupling
R75	5KΩ		4724		Decoupling Wire Wound-See Note 1
R76	100KΩ		4578	BTS-100K	Horiz. AFC Grid
R77	68KΩ	20%	4661	BTS-68K	Horiz. AFC Cathode
R78	4700Ω	20%	4563	BTS-4700	Horiz. Feedback
R79	3300Ω		4607	BTS-3300	Horiz. Feedback
R80	12KΩ		4660	BTS-12K	AFC Filter
R81	470KΩ	20%	4506	BTS-470K	AFC Filter
R82	470KΩ		4822	BTS-470K	Horiz. MV Grid
R83	1800Ω		4640	BTS-1800	Horiz. MV Cathode
R84	5600Ω		4639	BTS-5600	Horiz. MV Plate
R85	150KΩ		4589	BTS-150K	Horiz. MV Plate-See Note 11
R86	22KΩ		4628	BTS-22K	Horiz. MV Decoupling
R87	8200Ω		4651	BTS-2800	Horiz. Peaking
R88	100Ω		4566		Parasitic Suppressor
R89	470KΩ	30%	4506	BTS-470K	Horiz. Output Grid
R90	120Ω		4857		Horiz. Output Cathode
R91	8200Ω		4658	BTS-8200	Horiz. Output Screen-See Note 12
R92	4.7Ω		4719		HV Filament
R93	470KΩ		4506	BTS-470K	HV Filter-See Note 1
R94	150Ω	10	4730		1 3/4A-150 Filter Wire Wound
R95	1500Ω	5	4732		1 3/4A-1500 Voltage Divider Wire Wound
R96	5000Ω	3	4724		Focus Coil Shunt Wire Wound-See Note 1
R97A	1100Ω	10	4731		Voltage Divider Wire Wound
B	800Ω	10			Voltage Divider
R98	1Meg	½	¥513	BTS-1Meg	Phono Tone Compensation

● Items R64A, R64B, R64C, C61A, C61B, C61C, are combined into one unit in some models.
Note 1 Not used in all models.
Note 2 Some models use 2200Ω resistor in this application.
Note 3 Some models use 3900Ω resistor in this application.
Note 4 Some models use 47Ω resistor in this application.
Note 5 Some models use 3300Ω resistor in this application.
Note 6 Some models use 10KΩ resistor in this application.
Note 7 Some models use 100KΩ resistor in this application.
Note 8 Some models use 1Meg resistor in this application.
Note 9 Some models use 1.5Meg resistor in this application.
Note 10 Some models use 2.2Meg resistor in this application.
Note 11 Some models use 22KΩ resistor in this application.
Note 12 Some models use 15KΩ resistor in this application.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: VIKING PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
	FIELD RES.	V. C. IMP.				
SP1A	PM	3.1Ω	9015 or 9070 ④	12J12	12A4A	④ Used in some models
B	PM	3.1Ω	9078 ④	839	8A31	
	CONE DIA.	V. C. DIA.				
SP2A	12"	1"				
B	8"	1"				

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No
T1	117VAC ② 2A	760VCT 200ADC	5VAC ③ 3A	6.3VAC ⑨ 1.2A SEC. 4 6.3VAC ⑨ 9A SEC. 5 6.3VAC ⑨ 9.2A	5023		P-3067 and P3074	

HOFFMAN MODELS 630 thru 635, 866, A thru 868, A; 870, 871, 872; 876, A thru 878, A; 890, 891, 892

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	180Ω	980Ω	5127	A-8122	A-4000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	365Ω Taps 1Ω, 2.5Ω, 9.7Ω. 17.9Ω and 36Ω		5146 ② 5144 ③				Horiz. Output Trans.
T4	1.2KΩ Tap 11Ω		5140	A-8112	A-3036	TSO-5	Vert. Output Trans.
T5A	33Ω		5389				Horiz. Deflection Coils
B	45Ω		5324 ④				Vert. Deflection Coils
T6	1.5KΩ		5341				Focus Coil

① Drill one new mounting hole.
② Used in chassis 175.
③ Used in chassis 170, 171, 173
④ Used in some models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	6.3KΩ	3.1Ω	370Ω	.3Ω	5147 5131 ④	A-3823①	A-3020	RO-13 ①	① Drill one new mounting hole. ④ Used in some models.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.		NOTES
L1	Ant. Coil	0Ω	0Ω			Part of Tuner Part # 99532
L2	Ant. Coil	0Ω	0Ω			Part of Tuner Part # 99532
L3	Fil. Choke	0Ω				Part of Tuner Part # 99532
L4	RF Coil	0Ω				Part of Tuner Part # 99532
L5	RF Coil	0Ω				Part of Tuner Part # 99532
L6	Mixer Grid Coil	0Ω				Part of Tuner Part # 99532
L7	Mixer Grid Coil	0Ω				Part of Tuner Part # 99532
L8	Osc. Coil	0Ω				Part of Tuner Part # 99532
L9	Osc. Coil	0Ω				Part of Tuner Part # 99532
L10	Fil. Choke	0Ω				Part of Tuner Part # 99532
L11	Conv. Plate Coil	.2Ω				Part of Tuner Part # 99532
L12	Trap Coil	.5Ω				Part of Tuner Part # 99532
L13	1st. Video IF	.2Ω	.3Ω	5391		Includes Trap
L14	2nd. Video IF	.3Ω	.2Ω	5335		
L15	Adj. Sound Trap	.1Ω		5344		
L16	3rd. Video IF	.3Ω	.2Ω	5335		
L17	Sound Trap	.2Ω		5342		Tap 0Ω
L18	4.5MC Trap			5376		Not used in all models
L19	Peaking	17Ω		5339		350 Microhenries wound on 33KΩ resistor
L20	Peaking	17Ω		5340		350 Microhenries
L21	1st. Sound IF	0Ω		5386		
L22	Fil. Choke	0Ω		5133		
L23	2nd. Sound IF	.2Ω	0Ω	5304		
L24	Ratio Det. Trans.	.1Ω	0Ω	5305		Tap .1Ω
L25	Horiz. Osc.	70Ω		5300		
L26	Width Coil	.9Ω		5317		

FUSES

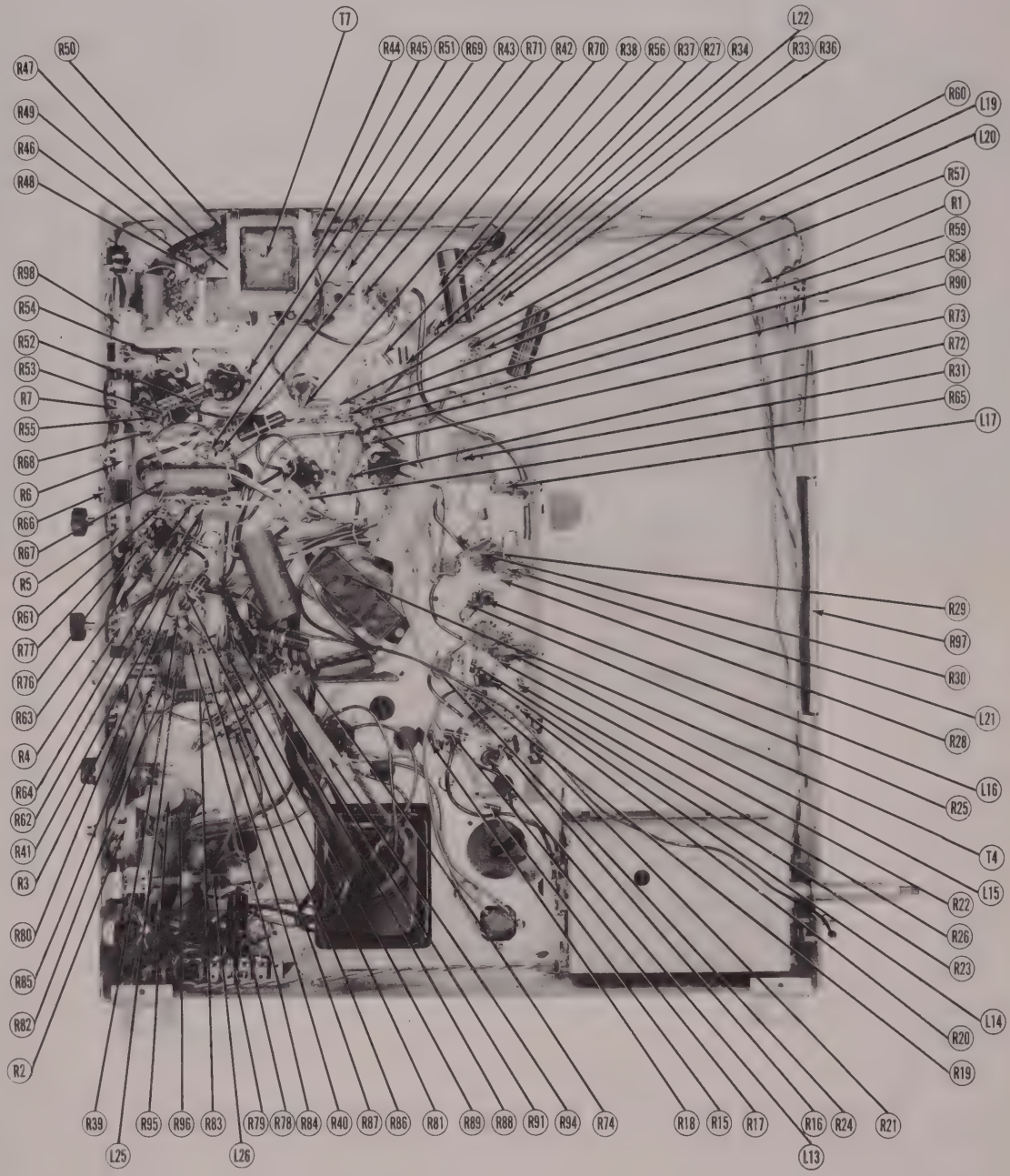
ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG Slo Blo	3 Amp.	9648		31303.2	342001	
M2	3AG	.250	9515		312.250	357001	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA HOFFMAN PART No.		NOTES
M3	Bayonet	7.5	.3	White	9676		Type # 51

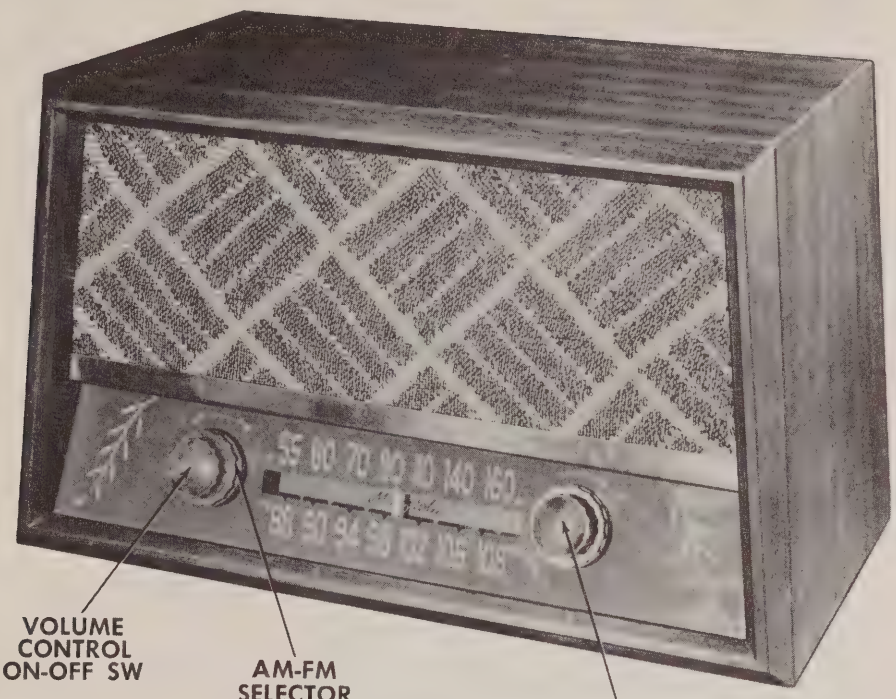
MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M4A	RF Tuner	99532	Continuous Type
B	RF Tuner	9684	Turret Type
M5	4th. Video IF	5336	
	Peaking	5338	60 Microhenries wound on 12KΩ resistor
	Resistor	4641	8.2KΩ
	Capacitor	4069	2.2 MMF.
	Capacitor	4074	1.2 MMF.
	Crystal	9075	
			} Video Det. Assembly
M6	Switch	6007	TV-Phono
M7	Ion Trap	9702 or 9669	



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

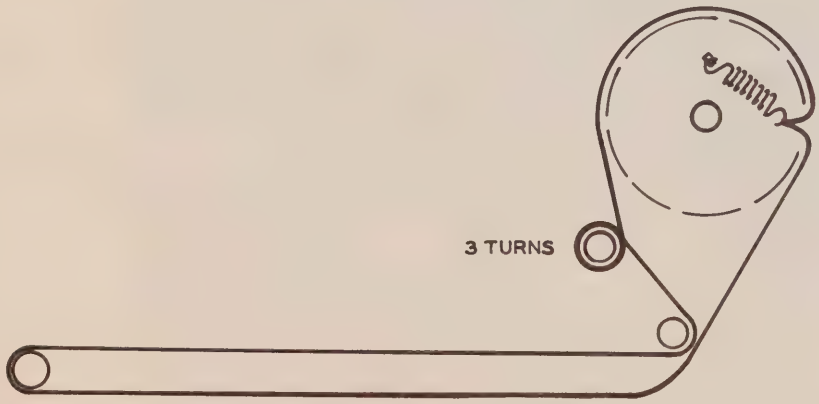
MANTOLA
MODEL 92-529



MANTOLA
MODEL 92-529

TRADE NAME	Mantola, Model 92-529
SUPPLIER	B. F. Goodrich Tire & Rubber Co., Akron, Ohio
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (EIGHT)	Types 6BJ6 FM RF Amp., 12AT7 FM Converter, 6BE6 AM Converter, 6BJ6 1st. IF Amp. 6BA6 2nd. FM IF Amp., 6T8 Det.-AVC-AF, 6AS5 Power Output, 6X4 Rectifier
POWER SUPPLY	105-125 Volts AC — RATING .36 Amp. at 117Volts AC
TUNING RANGE-BROADCAST	540-1620KC — FREQ. MOD. 88-108MC

TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

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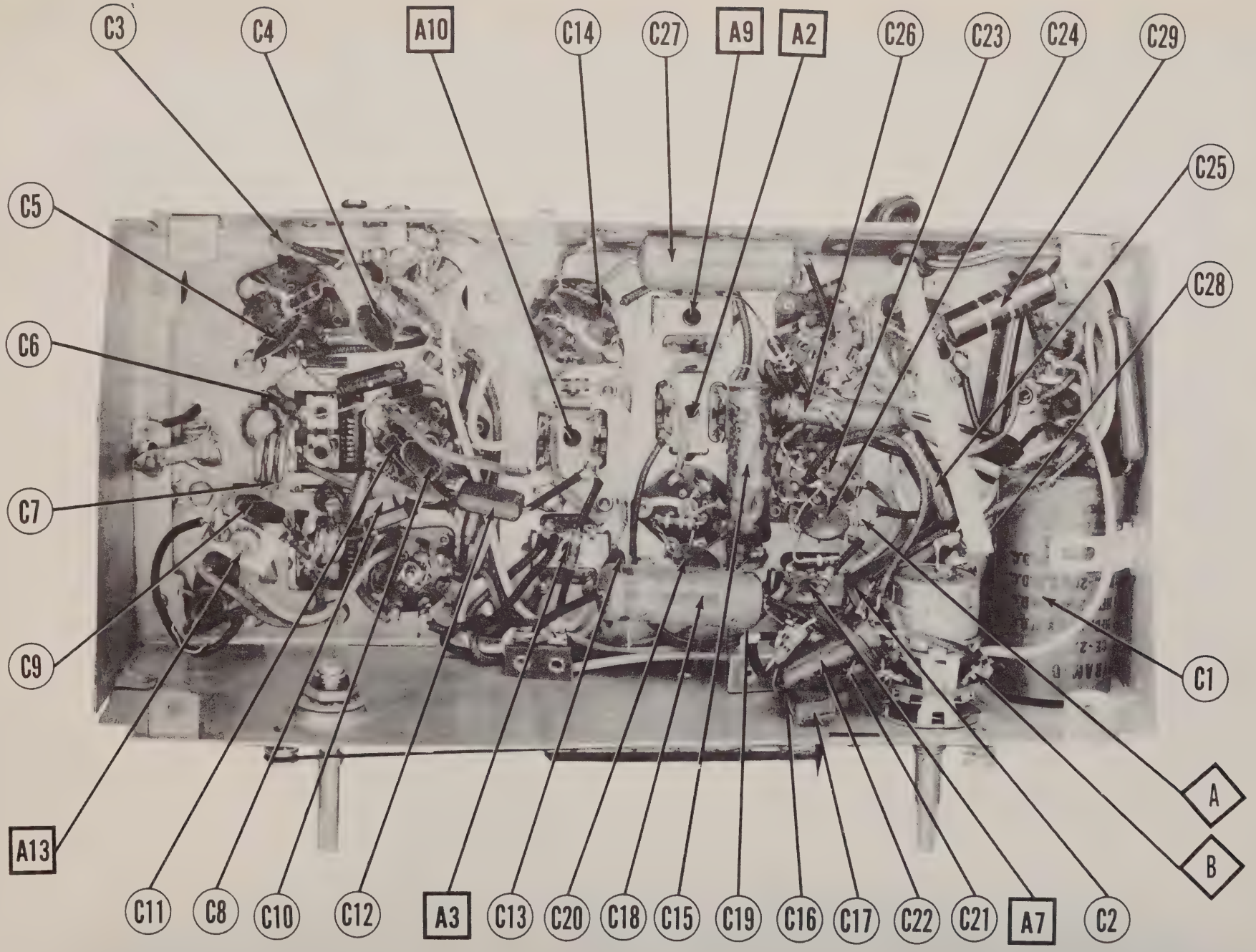
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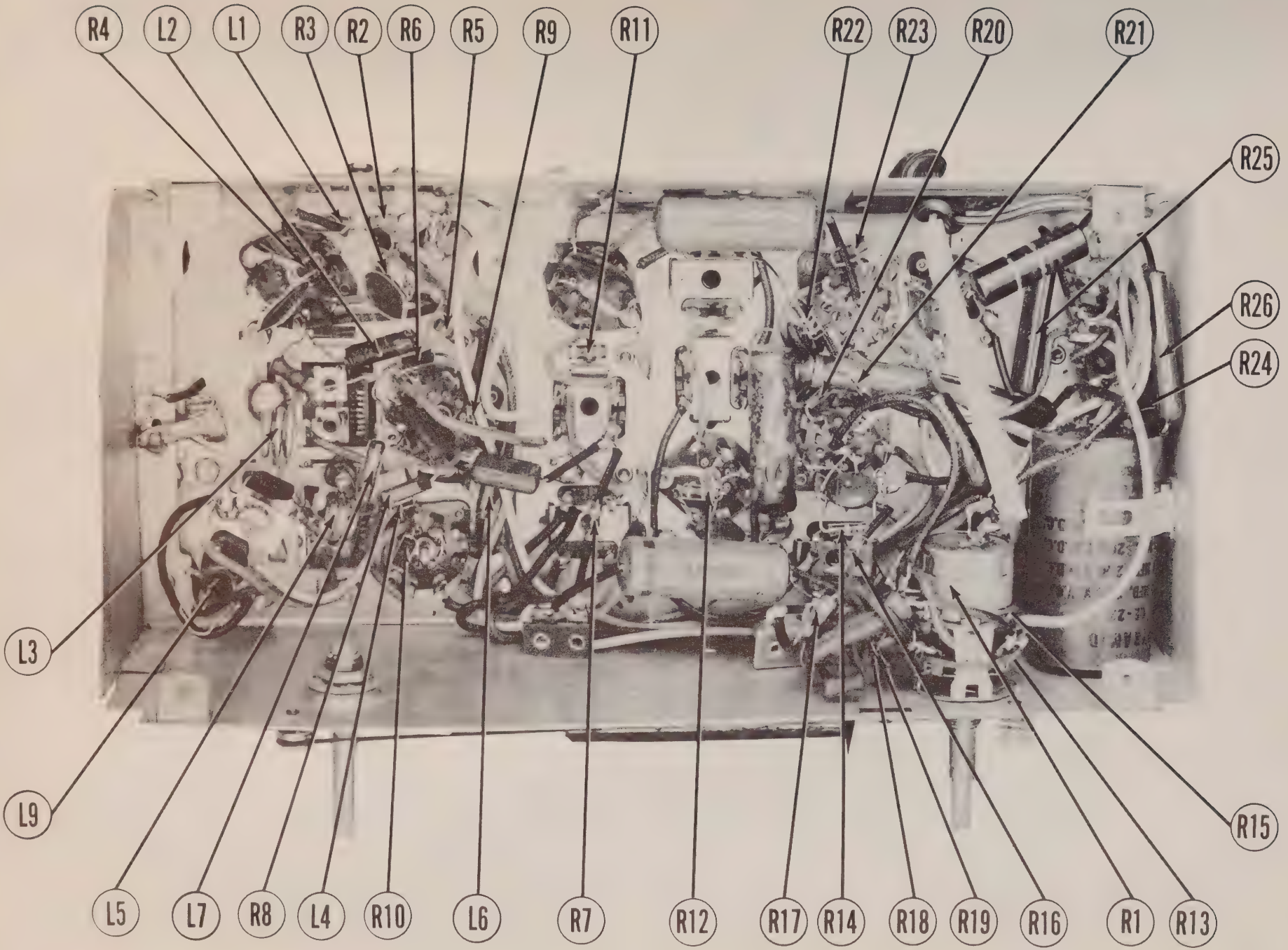
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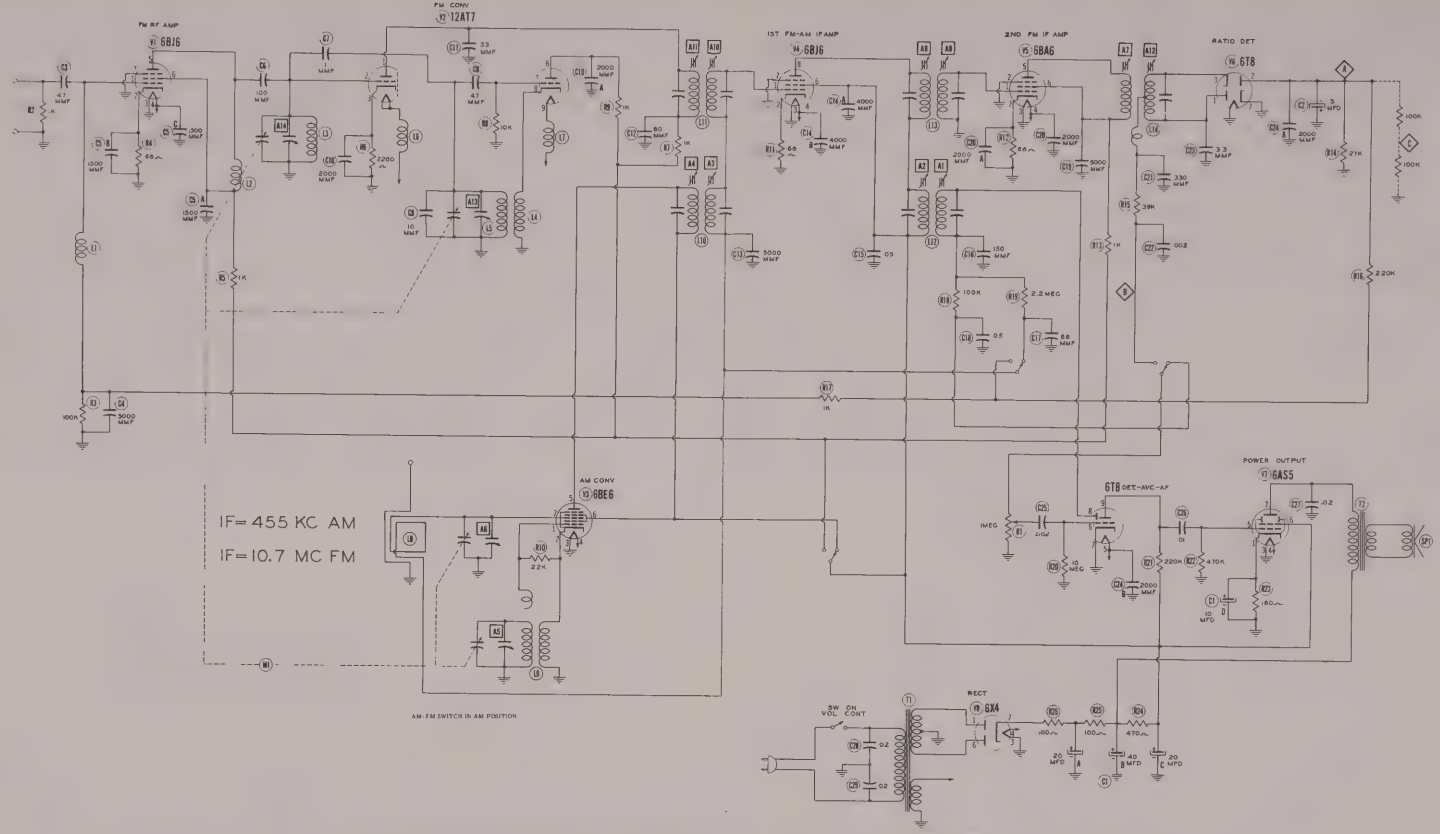

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	1 .3VDC + .0VDC ‡ .95VDC	1 .1VDC + 0V	0V	0 .3VAC	‡ .95VDC + 0V	‡ .50VDC ±0V	0V	0V	
V2	12AT7	±0V	0V	‡ 2 .8VDC ±0V	0 .2VAC	6 .3VAC ‡ 0V	‡ .75VDC ±0V	0V	0V	
V3	6BE6	0+ .38VDC ‡ 2VDC	0V	0V	0 .3VAC	‡ 100VDC + 0V	‡ 100VDC ±100VDC	‡ 100VDC ±100VDC	0V	
V4	6BJ6	+ .1VDC	1VDC	0V	+ .1VAC	‡ 100VDC + 0V	‡ 100VDC ±100VDC	0V ‡ 1VDC		
V5	6BA6	0V	0V	0V	0 .2VA	105VDC +0V	88VDC ±0V	±0V		
V6	6T8	- .4VDC	- .4VDC	- .4VDC	0V	0 .3VA	6VDC ‡ 100VDC	0V	- 6VDC	130VDC 130VDC
V7	6AS5	‡ 7 .8VDC ‡ 8 .8VDC	0V	2V	6 .3VAC	0V	±100VDC	11-VDC		
V8	6X4	356VDC	0V	0V	5 .3VAC	0V	350VDC	328VDC		

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	680Ω +1- 10%	0Ω	0Ω	∞	81K Ω ±1MΩ	±1MΩ ±1MΩ	‡ 1- 2KΩ ‡1- 2KΩ	0Ω	
V2	12AT7	±1MΩ	0Ω	2 .2KΩ	3Ω	2Ω ±1MΩ	±1MΩ ±1MΩ	‡1- 2KΩ ‡1- 2KΩ	0Ω	
V3	6BE6	2.2KΩ ‡ 20KΩ	0Ω	0Ω	0Ω	∞ ±5E20	±1MΩ ±10KΩ	‡ 80KΩ ‡ 80KΩ	‡ 40Ω ‡ 80KΩ	
V4	6BJ6	680Ω + 2.2MΩ	0Ω	0Ω	∞	∞ ±5E20	±1MΩ ±10KΩ	‡1- 2KΩ ‡1- 2KΩ	0Ω	
V5	6BA6	10 ‡ 1MΩ	0Ω	0Ω ‡ 1MΩ	1Ω	0Ω ‡ 1MΩ	±1MΩ ‡ 1MΩ	‡1- 2KΩ ‡1- 2KΩ	0Ω	
V6	6T8	‡ 1MΩ ±1MΩ	270Ω ±1MΩ	±1MΩ	0Ω	1Ω	±1MΩ ‡ 1MΩ	‡1- 2KΩ ‡1- 2KΩ	680Ω	
V7	6AS5	1MΩ	470KΩ	0Ω	∞	470KΩ	10KΩ	0Ω	10MΩ	‡±21KΩ
V8	6X4	80Ω	∞	0Ω	∞	∞	0Ω	500Ω		

‡ TAKEN IN FM POSITION
± TAKEN IN AM POSITION
‡ MEASURED FROM PIN 1 OF V8

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MANTOLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amplifier	6BJ6	6BJ6	7CM	
V2	FM Converter	12AT7	12AT7	9A	
V3	AM Converter	6BE6	6BE6	7CH	
V4	1st. FM-AM IF Amp	6BJ6	6BJ6	7CM	
V5	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V6	Ratio Detector-AM Detector-AVC-AF Amplifier	6T8	6T8	9E	
V7	Power Output	6AS5	6AS5	7CV	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: MANTOLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	200	CE-22	PRS450/40-20		EDL4225C		TVL-4470	Filter Blue
B	40	200		PRS250/20-20		BR2025			Filter Green
C	20	200							Filter Red
D	10	25							Output Cathode Yellow
C2	.5	250	CE-19					TVA-1501	Stabilizing Cap
C3	47		CC-047-8	SI47	D6-470	5W5Q5	GP1K-47	5GA-Q47	RF Coupling
C4	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C5A	1500		CC-3-0		DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Dec.
B	1500			BPD-3X0015	DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Cathode
C	1500				DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Fil.
C6	100		CC-101-7	SI100	D6-101	5W5T1	GP1K-100	5GA-T1	RF Coupling
C7	1		CSP-1		TCZ-1.0				Osc. Coupling
C8	47		CC-047-8	SI47	D6-470	5W5Q5	GP1K-47	5GA-Q47	Osc. Grid Cap
C9	10	500		1469-00001	TCZ-10	5R5Q1	NP0K-10	MS-41	Fixed Trimmer
C10A	2000		CC-2-1	BPD-2X002	DD-2-202	1W5D2	812-2X002	5HK-2D2	Osc. Anode Bypass
B	2000					1W5D2			Conv. Cathode
C11	33	500	CMS-033-9	SI33NP0	TCZ-33		NP0L-33	5GA-Q33	Fixed Trimmer
C12	800	500	CM-102	1468-001	DD-801	1W5T8	801-001	5HK-D1	Conv. Plate Dec.
C13	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C14A	4000		CC-2-2	BPD-2X004	DD-2-502	1D5D4	822-2X004	5HK-2D4	RF Bypass
B	4000					1D5D4			1st. IF Fil.
C15	.05	400	CP-503-1	P488-05	DF-503	PTE4S5		4TM-S5	RF Bypass
C16	150	500	CM-151-1	1468-00015	D6-151	5W5T15	GP2K-150	1FM-315	Diode RF Filter
C17	68	500	CC-068-7	1468-000075	D6-680	5W5Q7	GP1K-68	1FM-475	Diode RF Filter
C18	.05	400	CP-503-1	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C19	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. IF Dec.
C20A	2000		CC-2-1	BPD-2X002	DD-2-202	1W5D2	812-2X002	5HK-2D2	2nd. IF Cathode
B	2000					1W5D2			2nd. IF Fil.
C21	330	500	CM-331-8	1468-0003	D6-331	5W5T3	GP2K-330	5GA-T33	Diode Load Cap
C22	.002	600	CP-202-2	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	De-emphasis
C23	3.3		CC-3.3-11	SI3.3NP0	TCZ-3.3		NP0K-3.3		Balancing
C24A	2000		CC-2-1	BPD-2X002	DD-2-202	1W5D2	812-2X002	5HK-2D2	RF Bypass
B	2000					1W5D2			Ratio Det.-AF Amp. Fil.
C25	.002	600	CP-202-2	P688-002	D6-202	PTE6D2	GP2M-002	6TM-D22	Audio Coupling
C26	.01	400	CP-103-1	P488-01	D6-103	PTE4S1	821-01	4TM-S1	Audio Coupling
C27	.02	800	CP-203-20	P1088-02		PTE16S2		MB-S2	Output Plate Bypass
C28	.02	400	CP-203-1	P488-02	DF-203	PTE4S2		4TM-S22	Line Filter
C29	.02	400	CP-203-1	P488-02	DF-203	PTE4S2		4TM-S22	Line Filter

* Use mounting strap.

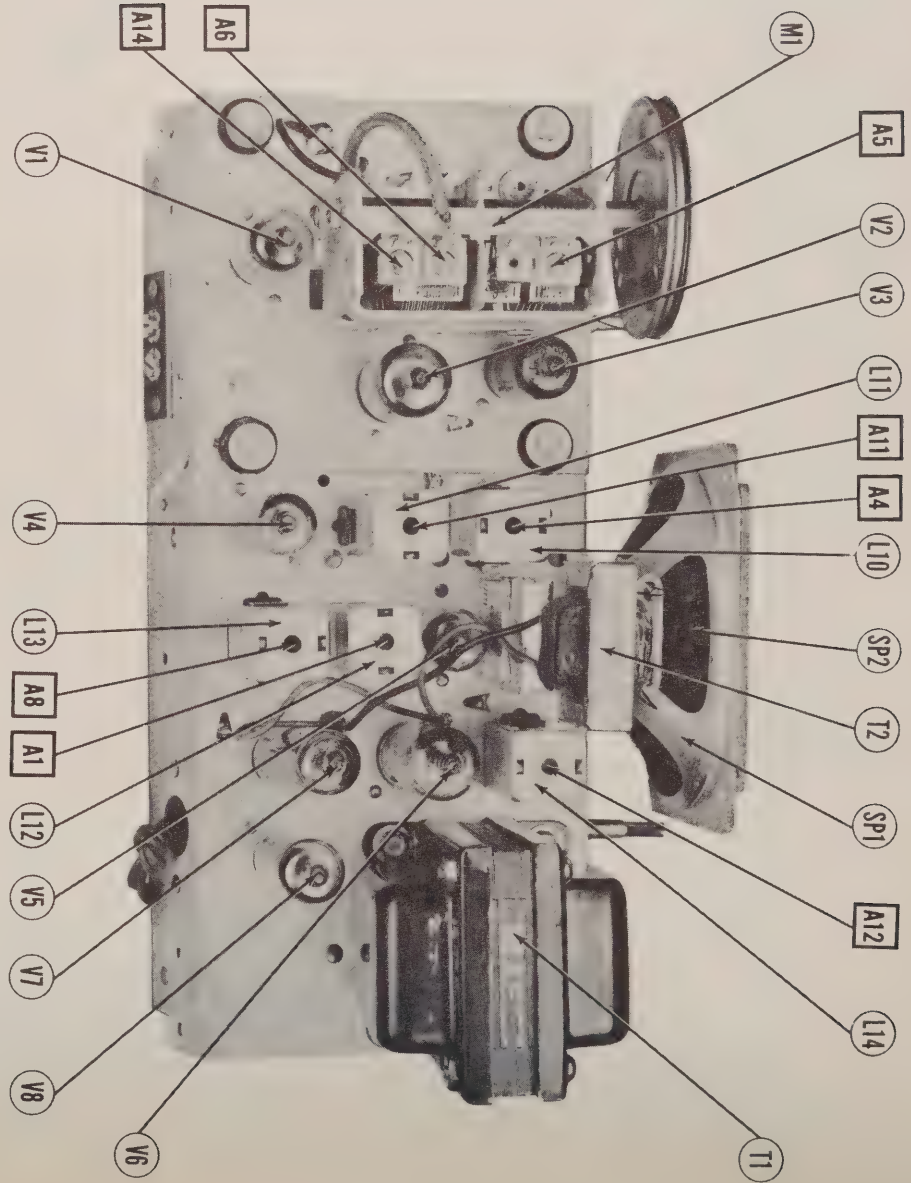
SET 150

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: MANTOLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	1Meg	½	VC-17				Volume Control and SW Ganged with AM-FM Switch

FOLDER 8

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MANTOLA PART No.	IRC PART No.	
R2	1000Ω	½	RC-102-1	BTS-1000	Antenna Loading
R3	100KΩ	½	RC-104-1		FM RF Amp. Grid
R4	68Ω	½	RC-680-2		FM RF Amp. Cathode
R5	1000Ω	½	RC-102-1	BTS-1000	FM RF Amp. Decoupling
R6	2200Ω	½	RC-222-2	BTS-2200	FM Mixer Cathode
R7	1000Ω	½	RC-102-1	BTS-1000	FM Mixer Decoupling
R8	10KΩ	½	RC-103-2		FM Osc. Grid
R9	1000Ω	½	RC-102-1	BTS-1000	FM Osc. Plate
R10	22KΩ	½	RC-223-1		AM Osc. Grid
R11	68Ω	½	RC-680-2		1st. IF Amp. Cathode
R12	68Ω	½	RC-680-2		2nd. FM IF Amp. Cathode
R13	1000Ω	½	RC-102-1	BTS-1000	2nd. FM IF Amp. Decoupling
R14	27KΩ	½	RC-273-3	BTS-27K	Ratio Det. Diode Load
R15	39KΩ	½	RC-393-2	BTS-39K	De-emphasis
R16	220KΩ	½	RC-224-1	BTS-220K	AVC Network
R17	1000Ω	½	RC-102-1	BTS-1000	AVC Network
R18	100KΩ	½	RC-104-1	BTS-100K	Diode Filter
R19	2.2Meg	½	RC-225-1	BTS-2.2Meg	Diode Filter
R20	10Meg	½	RC-106-1	BTS-10Meg	AF Amp. Grid
R21	220KΩ	½	RC-224-1	BTS-220K	AF Amp. Plate
R22	470KΩ	½	RC-474-1	BTS-470K	Output Grid
R23	180Ω	½	RC-181-2	BTS-180	Output Cathode
R24	470Ω	2	RW-471-8	BW-2-470	Filter - Wire Wound
R25	100Ω	2	RW-101-8	BW-2-100	Filter - Wire Wound
R26	100Ω	2	RW-101-8		Surge Limiter - Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MANTOLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .360A	320VDT .070ADC	6.3V @ 3.1A		TR-21	PC8419 ②	P-3148 ② ③	

② Add series resistor to reduce plate voltage.
③ Drill two new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MANTOLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	3.3KΩ	4Ω	310Ω	.6Ω		A-3877 ①	A-2930 ①	RO-6 ①	① Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	MANTOLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4Ω	SP-41-10B	ST-113 ② Model P4-X	4A1 ②	② Use universal mounting bracket
	CONE DIA.	V. C. DIA.				
SP2	3 15/16"	9/16"				

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	MANTOLA PART No.	
L1	FM Ant. Coil	.1Ω		LC-15	
L2	RF Choke	1.8Ω		LC-14	
L3	FM RF Coil	0Ω		LC-12	
L4	Cath. Choke	2.4Ω		LC-16	
L5	FM Osc. Coil	0Ω		LC-11	
L6	Fil. Choke	.3Ω		LC-13	
L7	Fil. Choke	.3Ω		LC-13	
L8	Loop Ant.	.3Ω	3.7Ω	LP-22-D	
L9	AM Osc. Coil	.7Ω	6.3Ω	LC-9	
L10	1st. AM IF	17Ω	17Ω	LF-32	
L11	1st. FM IF	.7Ω	.6Ω	LF-30	
L12	2nd. AM IF	12Ω	12Ω	LF-35	
L13	2nd. FM IF	.7Ω	.7Ω	LF-34	
L14	Ratio Det. Trans.	1.7Ω	1Ω	LF-33	

MISCELLANEOUS

ITEM No.	PART NAME	MANTOLA PART No.	NOTES
M1	2 Gang Var. Cap	CV-17	(21-387MMF., 24-165MMF)
A13	Trimmer	TA-3	FM Osc. Adj.
	Cabinet	CB-124-D	
	Dial Pointer	PN-17	
	Knob Assembly	KN-28	
	Knob	KN-26	Large
	Knob	KN-27	Small

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer 1 3/32 inch to the right of the center of the volume control shaft.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD.	High side to pin 7 (Grid) of 6BE6 (V3). Low side to chassis.	455MC (400∿ Mod.)	AM (CCW)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	"	Tune for max. output.	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point Ⓐ to chassis. The junction of these two resistors is alignment Point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD.	High side to pin 1 (Grid) of 6BJ6 (V4). Low side to chassis.	10.7MC (unmod.)	FM (CW)	Tuning gang fully open.	DC probe to Point Ⓐ. Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
5.	"	High side to pin 2 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	DC probe to Point Ⓑ. Common to Ⓒ	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD.	High side to pin 1 (Grid) of 6BJ6 (V4). Low side to chassis.	10.7MC (450KC SWP)	FM (CW)	Point of non-interference.	Vert. Amp. to Point Ⓐ. Low side to chassis.	A7, A8, A9	Disconnect stabilizer capacitor C2. Adjust for maximum amplitude and symmetry as per figure 1.
5.	"	High side to pin22 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	"	"	"	"	"	Vert. Amp. to Point Ⓑ. Low side to chassis.	A12	Reconnect capacitor C2. Adjust A12 so 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A7 for max. amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon resistors	High side thru 300Ω to ungrounded "FM" antenna terminal. Low side to chassis.	109MC (unmod.)	FM	Tuning gang fully open.	DC probe to Point Ⓐ. Common to chassis.	A13	Adjust for maximum deflection.
8.	"	"	87.5MC	FM	Tuning gang fully closed.	"	L5	Expand or compress coil turns for maximum deflection. Repeat steps 7 and 8 until no further improvement can be made.
9.	"	"	106MC	"	Tune for max. output.	"	A14	Adjust for maximum deflection.
10.	"	"	90MC	"	"	"	L3	Expand or compress coil turns for max. deflection. Repeat steps 9 and 10 until no further improvement can be made.

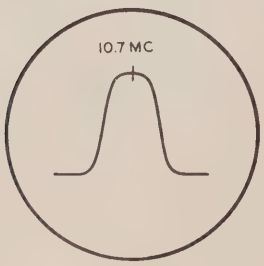


FIG. 1

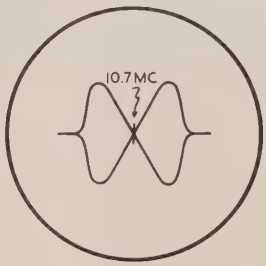


FIG. 2

MASCO
MODEL MSD-16

MASCO
MODEL MSD-16

TRADE NAME	Masco, Model MSD-16
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th. St., Long Island City, New York
TYPE SET	AC Operated Phono Player and Audio Amplifier
TUBES (FIVE)	Types 12AX7 Mic. 1 and 2 Pre-Amp.-1st. AF, 6SL7GT 2nd. AF-Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .575 Amp. at 117 Volts AC

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1951 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

MASCO
MODEL MSD-16

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Mic. # 1 and 2 Pre-Amp. - 1st. AF Amp.	12AX7	12AX7	9A	
V2	2nd. AF Amplifier-Phase Inverter	6SL7GT	6SL7GT	8BD	
V3	Power Output	6V6GT	6V6GT	7AC	
V4	Power Output	6V6GT	6V6GT	7AC	
V5	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450		AFH3-36		UP2250		TVL-3780	▲ Filter
B	20	450							■ Power Output Screen
C	10	450							▲ Not used
C2A	10	450		AFH2-47		UPT1145		TVL-2750	■ 2nd. AF Amp. Dec.
B	10	450							▲ Pre-Amp. 1st. AF Amp. Dec.
C3	50	50		PRS50/50		BR505		TVA-1308	Power Output Cathode
C4	50	50		PRS50/50		BR505		TVA-1308	1st. AF Amp. Cathode
C5	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C6	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C7	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C8	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Audio Coupling
C9	.001	600		P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Tone Comp.
C10	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.
C11	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C12	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Tone Comp.
C13	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C14	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C15	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Line Isolation
C16	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Line Isolation *

* Not used in all models.

CONTROLS

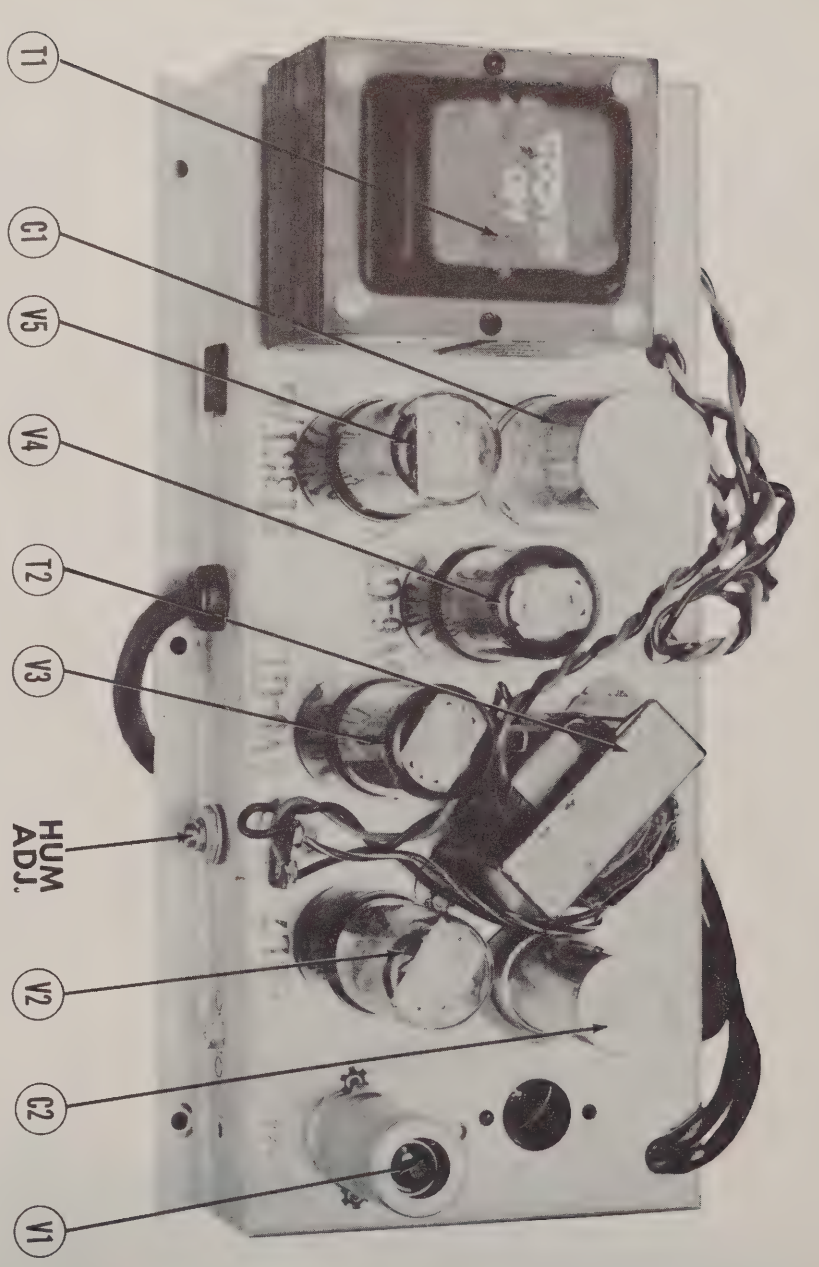
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	33-010-188	Q13-133	AG-60-Z	B-60	Mike Volume Control
B	Shaft		Not req.	Not req.	RS-2	Not req.	Attach to R1A per instructions
R2A	500KΩ	½	34-011-182	Q13-133	AG-60-Z	B-60-S	Phono Volume Control
B	Shaft		Not req.	Not req.	RS-2	Not req.	Attach to R2A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R2A per instructions
R3A	5Meg	½			AG-69-Z		Treble Control and SW
B	Shaft				RS-2		Attach to R3A per instructions
C	Switch				SWB		Attach to R3A per instructions
R4A	5Meg	½			AG-69-Z		Bass Control
B	Shaft				RS-2		Attach to R4A per instructions
R5	50Ω	1			43-50		Hum Control - See Note 1

Note 1 Some models use 80Ω control in this application.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
R6	2.7Meg	½		BTS-2.7Meg	Mike Pre-Amp. Grid
R7	470KΩ	½		BTS-470K	Mike Pre-Amp. Plate
R8	270KΩ	½		BTS-270K	Isolation
R9	2200Ω	½		BTS-2200	1st. AF Amp. Cathode
R10	100KΩ	½		BTS-100K	1st. AF Amp. Plate
R11	100KΩ	½		BTS-100K	Tone Compensation - See Note 1
R12	10KΩ	½		BTS-10K	2nd. AF Amp. Grid - See Note 2
R13	1500Ω	½		BTS-1500	2nd. AF Amp. Cathode
R14	100KΩ	½		BTS-100K	2nd. AF Amp. Plate
R15	6800Ω	½		BTS-6800	Phase Inverter Grid
R16	1500Ω	½		BTS-1500	Phase Inverter Cathode
R17	100KΩ	½		BTS-100K	Phase Inverter Plate
R18	100KΩ	½		BTS-100K	Output Grid
R19	100KΩ	½		BTS-100K	Output Grid
R20	270Ω	2		BTB-270	Output Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R21	270KΩ	½		BTS-270K	Isolation
R22	47KΩ	½		BTS-47K	Decoupling
R23	27KΩ	½		BTS-27K	Decoupling
R24	5000Ω	1		BTA-4700	Filter

Note 1 Some models use a 1Meg resistor in this application.
Note 2 Some models use a 100KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @575A	640VCT .092ADC	5VAC @ 2A	6.3VAC @ 1.8A	A-8-D	PM8409 ②	P-2952	

② Add series resistor to reduce plate voltage if necessary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	9.3KΩ CT	8Ω Tap 4Ω	450Ω CT	.9Ω Tap .7Ω	D-12-S	A-3831 ①	A-3027		① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	MASCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	6Ω		ST102		
B				Model P12-S	12A6	
B	PM	6Ω		ST102		
				Model P12-S	12A6	
	CONE DIA.	V. C. DIA.				
SP2A	11½"	1"				
B	11½"	1"				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			MASCO PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	2A			312002	341001	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								REMARKS
	MASCO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		LQD-1J 400-D *	"Q" Q-33			96-T	O-1 or S-1 and O-3 or S-3	* Complete arm and cartridge assembly.

ASTATIC, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

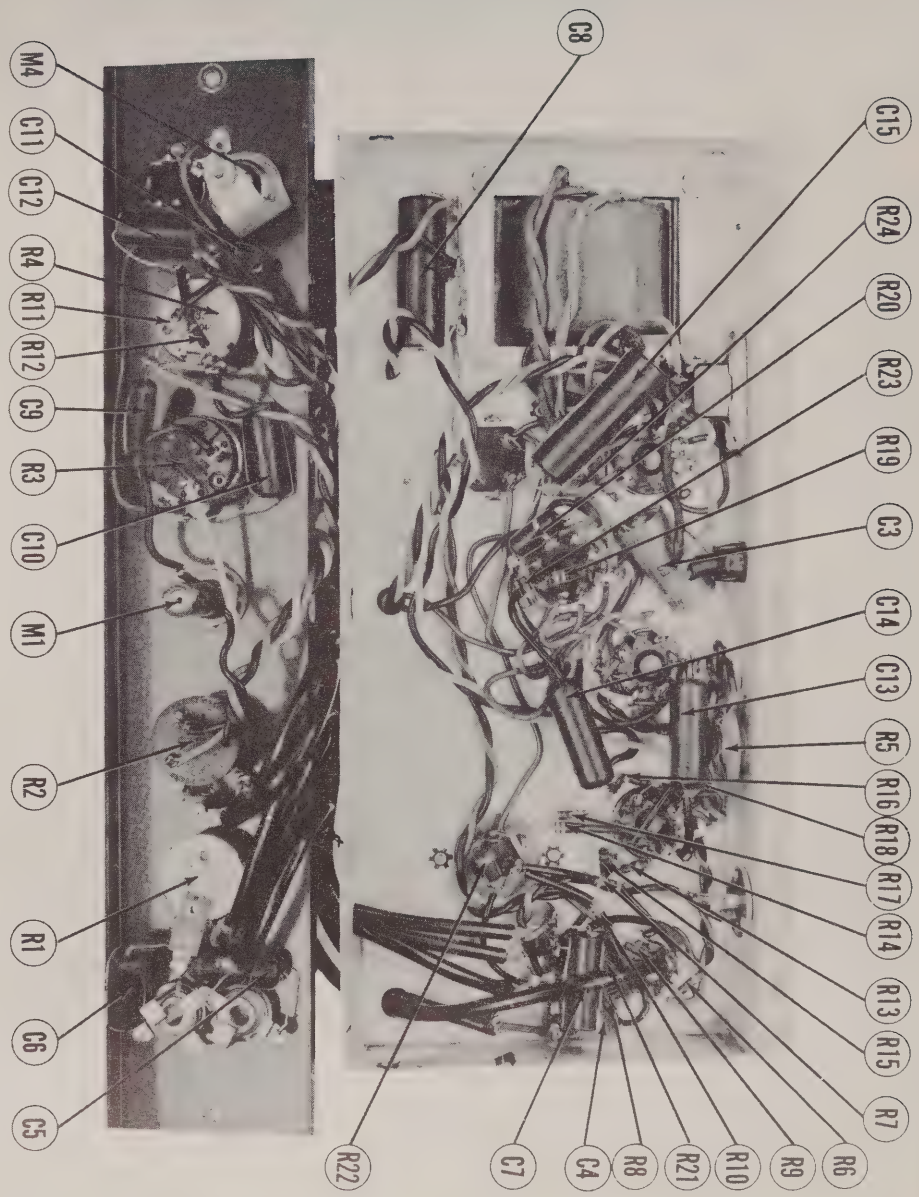
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA		REMARKS
	MASCO PART No.	WALCO PART No.	
M3		W-2A or W-2S and W-2MGA or W-2MGS	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
M4	Bayonet	6-8	.15	Brown			Type # 47

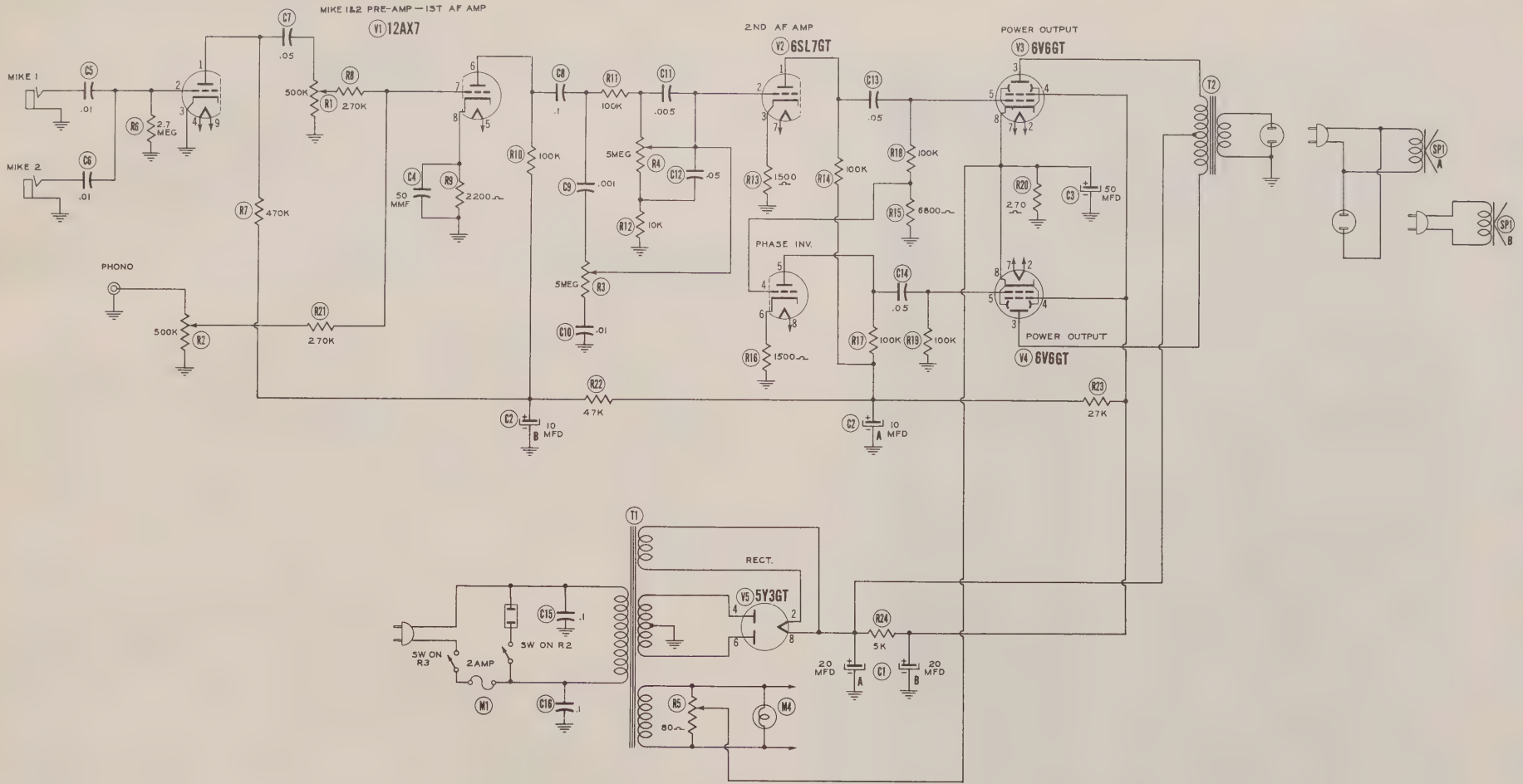
CHASSIS—BOTTOM VIEW



SET 150 FOLDER 9

MASCO MODEL MSD-16

MASCO MODEL MSD-16



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	85VDC	-.4VDC	0V	¶6.3VAC	¶6.3VAC	120VDC	0V	1.1VDC	¶0V
V 2	6SL7GT	0V	120VDC	1.5VDC	0V	120VDC	1.5VDC	¶0V	¶6.3VAC	
V 3	6V6GT	0V	¶6.3VAC	320VDC	300VDC	0V	0V	¶0V	18VDC	
V 4	6V6GT	0V	¶6.3VAC	320VDC	300VDC	0V	215VDC	¶0V	18VDC	
V 5	5Y3GT	0V	330VDC	117VAC	300VAC	117VAC	300VAC	0V	330VDC	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†550KΩ	2.7Meg	0Ω	¶.1Ω	¶.1Ω	†110KΩ	150KΩ	2.2KΩ	¶0Ω
V 2	6SL7GT	10KΩ	†100KΩ	1.5KΩ	6.8KΩ	†100KΩ	1.5KΩ	¶0Ω	¶.1Ω	
V 3	6V6GT	0Ω	¶.1Ω	†225Ω	†5KΩ	100KΩ	Inf.	¶0Ω	270Ω	
V 4	6V6GT	0Ω	¶.1Ω	†225Ω	†5KΩ	100KΩ	†32KΩ	¶0Ω	270Ω	
V 5	5Y3GT	Inf.	50KΩ	Inf.	140Ω	Inf.	150Ω	Inf.	50KΩ	

† MEASURED FROM PIN 8 OF V5
¶ MEASURED FROM PIN 7 OF V4

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

OLDSMOBILE
MODELS 982699, 982700

OLDSMOBILE
MODELS 982699, 982700

OLDSMOBILE
MODELS 982699, 982700

OLDSMOBILE MODEL 982699

TRADE NAME	Oldsmobile, Models 982699, 982700
SUPPLIER	Oldsmobile Motors, Div. of General Motors Corp., Lansing, Michigan
TYPE SET	Battery Operated Custom-Built 1951 Oldsmobile Auto Radio, Superheterodyne Receiver
TUBES (EIGHT)	Types 6BA6 RF Amp., 6SA7 Converter, 6BA6 IF Amp., 6R8 Det.-AVC-AF, (2) 6V6GT Power Output, 12AU7 Trigger Amp., 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.6 Amp. at 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8, (grid) of 6SA7, (V2). Low side to chassis.	260KC (400~Mod.)	High freq. end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	68MMF	High side thru dummy to ant. receptacle.	1615KC	High freq. end stop. Check the core of L5 to see that the rear of the core is 1 – 25/32 in. from the mounting end of the coil. (Insert plug in coil to measure).	"	A5, A6, A7	"
3.	"	"	600KC	Tune for maximum output.	"	A8, A9	"
4.	"	"	1615KC	"	"	A6, A7	"
5.	"	"	1000KC	"	"		Adjust pointer adjust screw until pointer is at 1000 on dial scale.

After set is installed, fully extend antenna and tune in a weak station between 600 and 1000KC. Adjust A7 for maximum volume.

FOR COMPLETE INFORMATION ON SIGNAL SEEKING TUNER SEE PHOTOFACT SET 145 FOLDER 8.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		OLDSMOBILE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	5252	6BA6	7BK	
V2	Converter	5222	6SA7	8R	
V3	IF Amplifier	5252	6BA6	7BK	
V4	Det.-AVC-AF	5541	6R8	9E	
V5	Power Output	5241	6V6GT	7AC	
V6	Power Output	5241	6V6GT	7AC	
V7	Trigger Amplifier	5328	12AU7	9A	
V8	Rectifier	5003	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	OLDSMOBILE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	20	400	7259128	AFH 3-129		UP2245C		TVL-3678	■ Filter
B	20	400							▲ Filter
C	20	100							Power Output Cathode
C2	20	50	1219660	PRS 50/25		BR205A		TVA-1306	AF Amp. Cathode
C3	100	500	G100	1468-0001	D6-101	5W5-T1	GP1K-101	1FM-31	RF Coupling
C4	.05	200	G537	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	.05	200	G537	P288-05	DF-503	PTE4S5		2TM-S5	RF Amp. Cathode
C6	68	500	G680	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	RF Coupling
C7	39	500	G390	1469-00004	TCZ-39	5R5Q4	NP9L-390	MS-44	Fixed Trimmer
C8	260		7257567				N080-338-261		Fixed Trimmer
C9	.1	200	G539	P288-1	DF-104	PTE4P1		2TM-P1	IF Amp. Cathode
C10	.1	400	G539	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C11	68	500	G680	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	IF Coupling
C12	.002	600	E202	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	DC Amp. Grid Filter
C13	.001	600	G527	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Tone Comp.
C14	.01	400	G533	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C15	220	500	G221	1468-00025	D6-221	5W5T25	GP2K-221	1FM-325	AF Amp. Plate
C16	.1	400	G539	P488-1	DF-104	PTE4P1		4TM-P1	Audio Coupling
C17	.015	600	7237719	P688-015		PTE6S15		6TM-S15	Tone Comp.
C18	.0015	800	7236134	P1088-0015				MB-D15	Power Output Plate
C19	100	500	G101	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	RF Bypass
C20	.006	1600	H602	P1688-006		PTE16D6		MB-D6	Buffer Cap.
C21	.5	100	7259954	P188-5		GT2P5		68P20	Hash Filter
C22	.5	100	7259954	P188-5		GT2P5		68P20	Hash Filter
C23	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling

CONTROLS

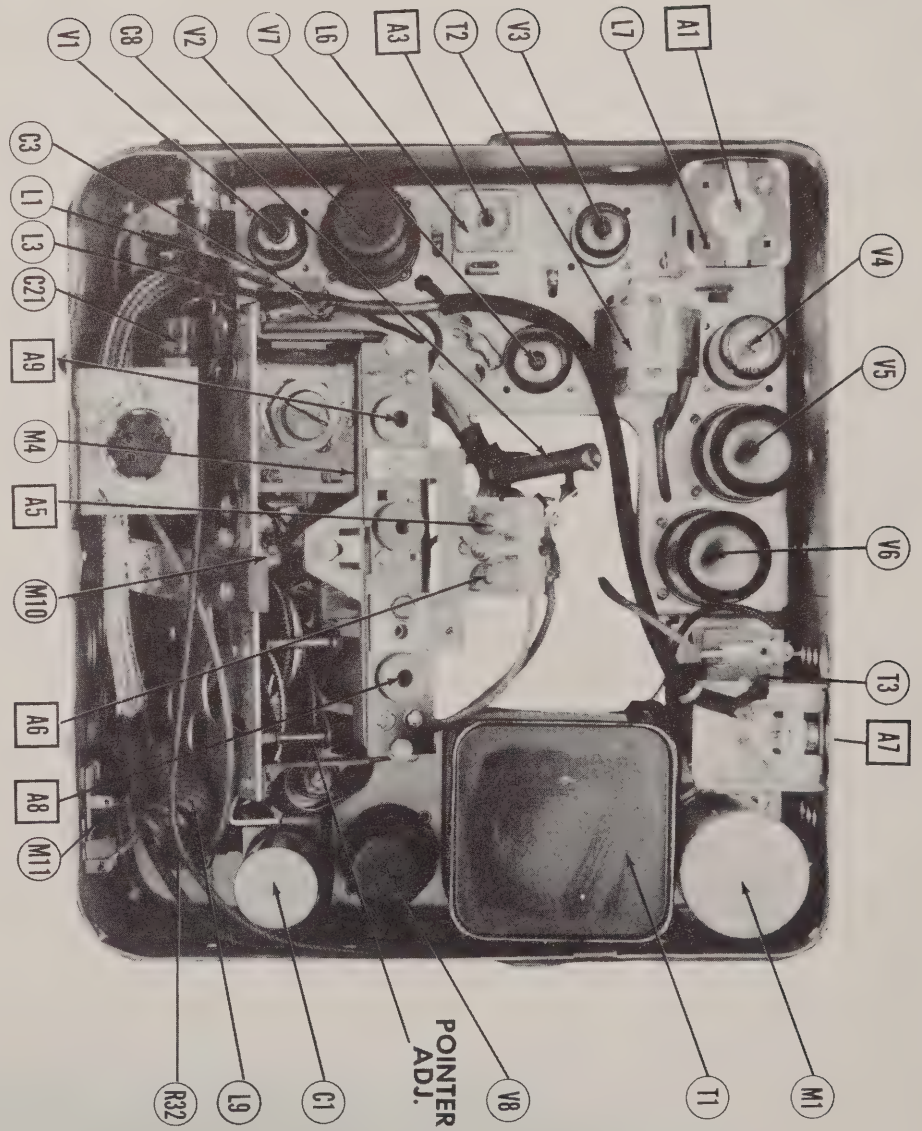
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	Oldsmobile PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	Inf.	$\frac{1}{2}$	7260310 *				Tone Control
B	1Meg						Volume Control and SW
R2	1000Ω						Bias Control †

* Part #7260294 used in model 982700.
† Not used in all models.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLDSMOBILE PART No.	IRC PART No.	
R3	2.2Meg	$\frac{1}{2}$	A225	BTS-2.2Meg	RF Amp. Grid
R4	10KΩ	1	B103	BTA-10K	RF Amp. Plate
R5	100Ω	$\frac{1}{2}$	A101	BTS-100	Sensitivity Network
R6	330KΩ	$\frac{1}{2}$	A334	BTS-330K	Mixer Grid
R7	22KΩ	$\frac{1}{2}$	A223	BTS-22K	Osc. Grid
R8	1.5Meg	$\frac{1}{2}$	A155	BTS-1.5Meg	AVC Network
R9	12KΩ	2	1212491	BTB-12K	Screen Dropping-See Note 1
R10	10Ω	$\frac{1}{2}$	A100		Parasitic Suppressor
R11	100Ω	$\frac{1}{2}$	A101	BTS-100	IF Amp. Cathode
R12	68Ω	$\frac{1}{2}$	1215558		Sensitivity Network
R13	56Ω	$\frac{1}{2}$	1214540		Sensitivity Network
R14	47Ω	$\frac{1}{2}$	1213489		Sensitivity Network
R15	100Ω	$\frac{1}{2}$	A101	BTS-100	Sensitivity Network
R16	180Ω	$\frac{1}{2}$	1215559	BTS-180	Sensitivity Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLDSMOBILE PART No.	IRC PART No.	
R17	220Ω	½	A221	BTS-220	Sensitivity Network
R18	150Ω	½	A151	BTS-150	Sensitivity Network
R19	1.5Meg	½	A155	BTS-1.5Meg	AVC Network
R20	330KΩ	½	A331	BTS-330K	Detector Diode Load
R21	1Meg	½	A105	BTS-1Meg	AF Amp. Grid
R22	33KΩ	1		BTA-33K	AF Amp. Plate-See Note 2
R23	1500Ω	½	1219488	BTS-1500	Bias Network
R24	2200Ω	½		BTS-2200	Bias Network-See Note 3
R25	120KΩ	½	1213271	BTS-220K	Tone Compensation
R26	360Ω	1	7234563	BW-1-360	Output Cathode Wire Wound
R27	120KΩ	½	1213271	BTS-120K	Trigger Amp. Grid
R28	56KΩ	1		BTA-56K	Trigger Amp. Cathode-See Note 4
R29	6800Ω	1	1216154	BTA-6800	Trigger Amp. Cathode
R30	3.3Meg	½	A335	BTS-3.3Meg	Trigger Amp. Plate Load
R31	56KΩ	1		BTA-56K	Voltage Divider-See Note 4
R32	13KΩ	1	7231539	BTA-12K	Feedback
R33	1800Ω	2		BW-2-1800	Filter Wire Wound
R34	1200Ω	1		BTA-1200	Hash Suppressor-See Note 5

Note 1 Some models use resistors in parallel to obtain desired value.
Note 2 Some models use 27KΩ resistor in this application.
Note 3 Some models use 2700Ω resistor in this application.
Note 4 Some models use 47KΩ resistor in this application.
Note 5 Some models use 220Ω resistor in this application.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	OLDSMOBILE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC ② 4.2A	540VCT .062ADC			7255881	P-6473 ②	P-4079	VT-4

① Drill new mounting holes.

(DRIVER) CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	Oldsmobile PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T2		1.6KCT	7.5 Henry CT					

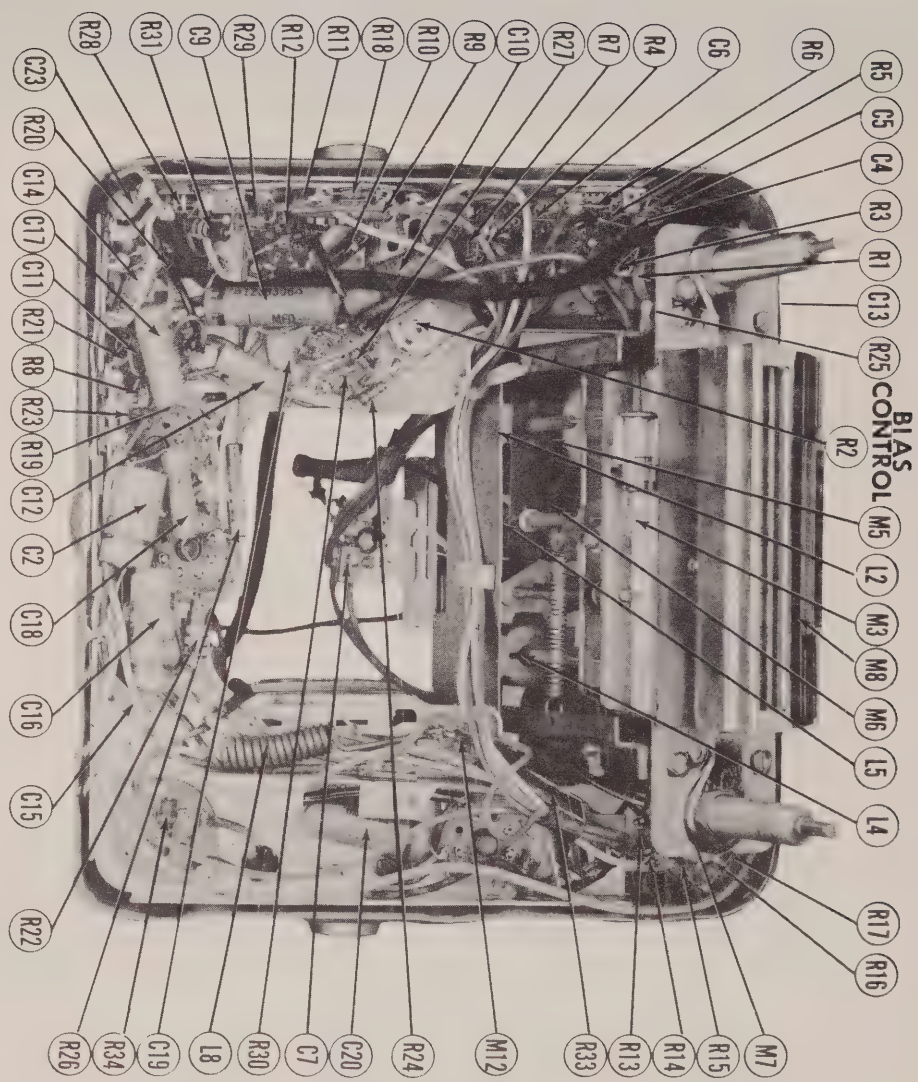
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLDSMOBILE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	7.5KCT	4.2Ω.	390ΩCT	.3Ω	7259324				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V.C. IMP.	Oldsmobile PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	4.2Ω	7258146	ST810 Mod. P69-V	69A2	
	CONE DIA.	V.C. DIA.				
SP2	6"X9"	9/16"				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA OLDSMOBILE PART No.		
L1	Ant. Hash Choke	.7Ω		7255738		
L2	Ant. Coil	10Ω		7257979		
L3	Ant. Coupling Choke	4.8Ω		7240251		
L4	RF Coil	10Ω		7257979		
L5	Osc. Coil	1.1Ω	4.1Ω	7259184		
L6	1st IF	40Ω	40Ω	1219508		
L7	2nd IF	18Ω	9Ω	1219602		
L8	Fil. Choke	0Ω		1217846		
L9	Hash Choke	0Ω		1217846		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA OLDSMOBILE PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	INSTALLATION NOTES
M1	INT	6.3V	115 ∿	8542	5300	5300	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA OLDSMOBILE PART No. FUSE	OLDSMOBILE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M2	3AG	15A	7260328 ①		311015	155020	① Includes fuse and holder.

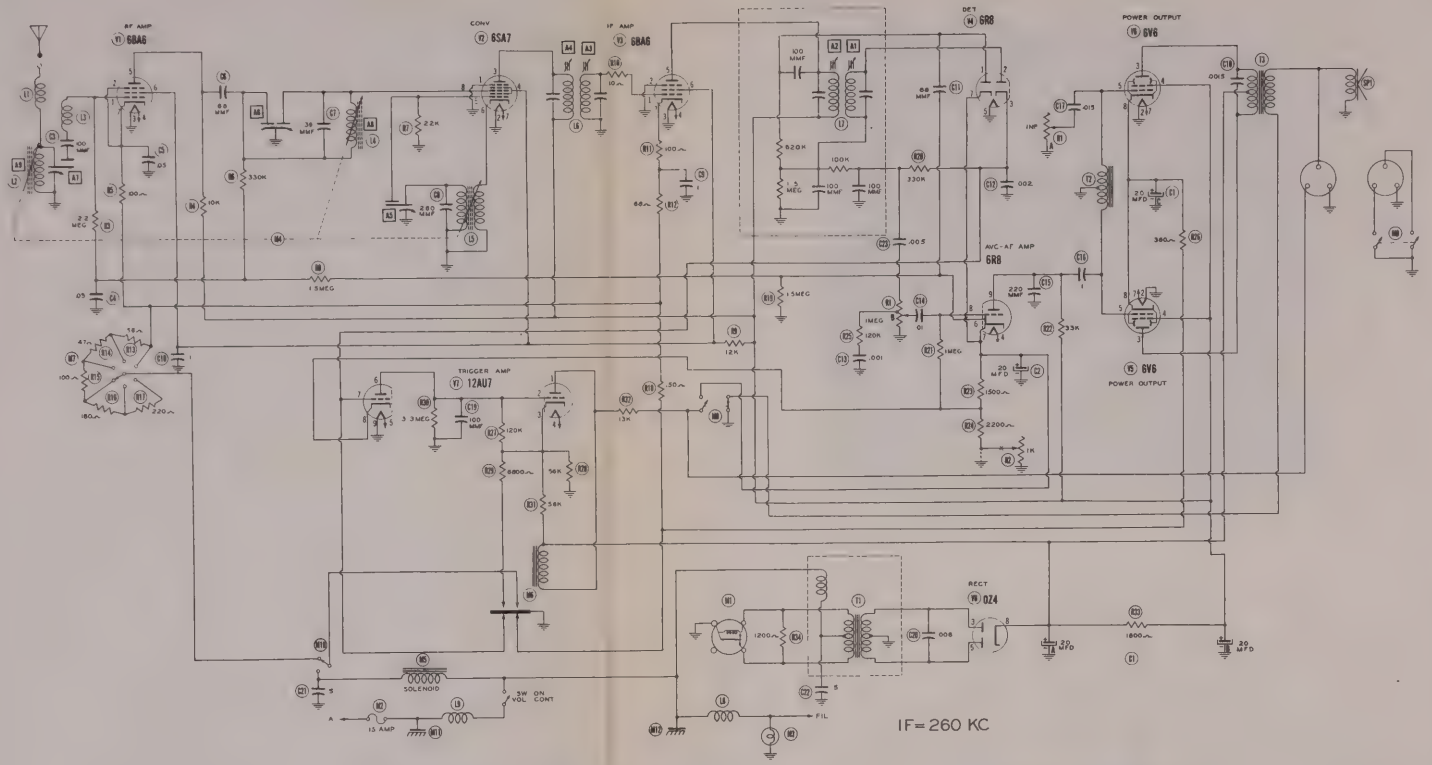
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA OLDSMOBILE PART No.		NOTES
M3	Bayonet	6-8	.25	Blue	44		Type number 44.

MISCELLANEOUS

ITEM No.	PART NAME	OLDSMOBILE PART No.	NOTES
M4	Tuner Unit		
M5	Solenoid	1219661	
M6	Relay	7259009	
M7A	Switch	7260300	Sensitivity (Model 982699)
B	Switch	7260285	Sensitivity (Model 982700)
M8	Switch	7259012	Station Selector
M9	Switch	7260840	Foot
M10	Switch	7259011	Tuner Return
M11	Spark Plate	7241259	
M12	Spark Plate	1217848	
A5 }	Dual Trimmer	7242454	{ Osc. Adj.
A6 }			{ RF Adj.
A7	Trimmer	7258160	Ant. Adj.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	0V	2 6VDC	0V	6.3VDC	175VDC	75VDC	3.6VDC		
V 2	6BA7	0V	0V	185VDC	75VDC	1-12VDC	0V	6.3VDC	0V	
V 3	6BA6	0V	0V	6 3VDC	0V	185VDC	75VDC	3.6VDC		
V 4	6R8	1VDC	6VDC	0V	6.3VDC	0V	0V	16.6VDC	.8VDC	108VDC
V 5	6V6GT	0V	0V	230VDC	185VDC	0V	0V	6.3VDC	12VDC	
V 6	6V6GT	0V	0V	230VDC	185VDC	0V	0V	6.3VDC	12VDC	
V 7	12AU7	225VDC	85VDC	185VDC	6.3VDC	6.3VDC	30VDC	0V	6.6VDC	0V
V 8	0Z4	0V	0V	350VAC	0V	350VAC	0V	0V	325VDC	

* TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 3	Pin 2	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	0.5Meg	250Ω	0Ω	40	110Ω	110Ω	250Ω		
V 2	6BA7	0Ω	0Ω	11.8KΩ	110Ω	33KΩ	110	40	0.5Meg	
V 3	6BA6	30Ω	0Ω	40	0Ω	11.8KΩ	110Ω	250Ω		
V 4	6R8	1.25Meg	630Ω	0Ω	40	0Ω	1.5Meg	0.5MΩ	15Meg	12MΩ
V 5	6V6GT	Inf.	0Ω	110Ω	11.8KΩ	800Ω	Inf.	40	250Ω	
V 6	6V6GT	0Ω	0Ω	110Ω	11.8KΩ	800Ω	Inf.	40	340Ω	
V 7	12AU7	12.2KΩ	40KΩ	40	40	40	110KΩ	0Ω	2.2KΩ	0Ω
V 8	0Z4	0Ω	Inf.	300Ω	Inf.	300Ω	Inf.	Inf.	90KΩ	

† MEASURED FROM PIN 8 OF V8

SENSITIVITY SWITCH FULLY COUNTERCLOCKWISE.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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PHOTOFACT* Folder

*TRADE MARK

SCOTT (E.H.) MODELS
Ravenswood, 710, 710A, 710X, 910

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MODEL 710A

SCOTT (E.H.) MODELS
Ravenswood, 710, 710A, 710X, 910

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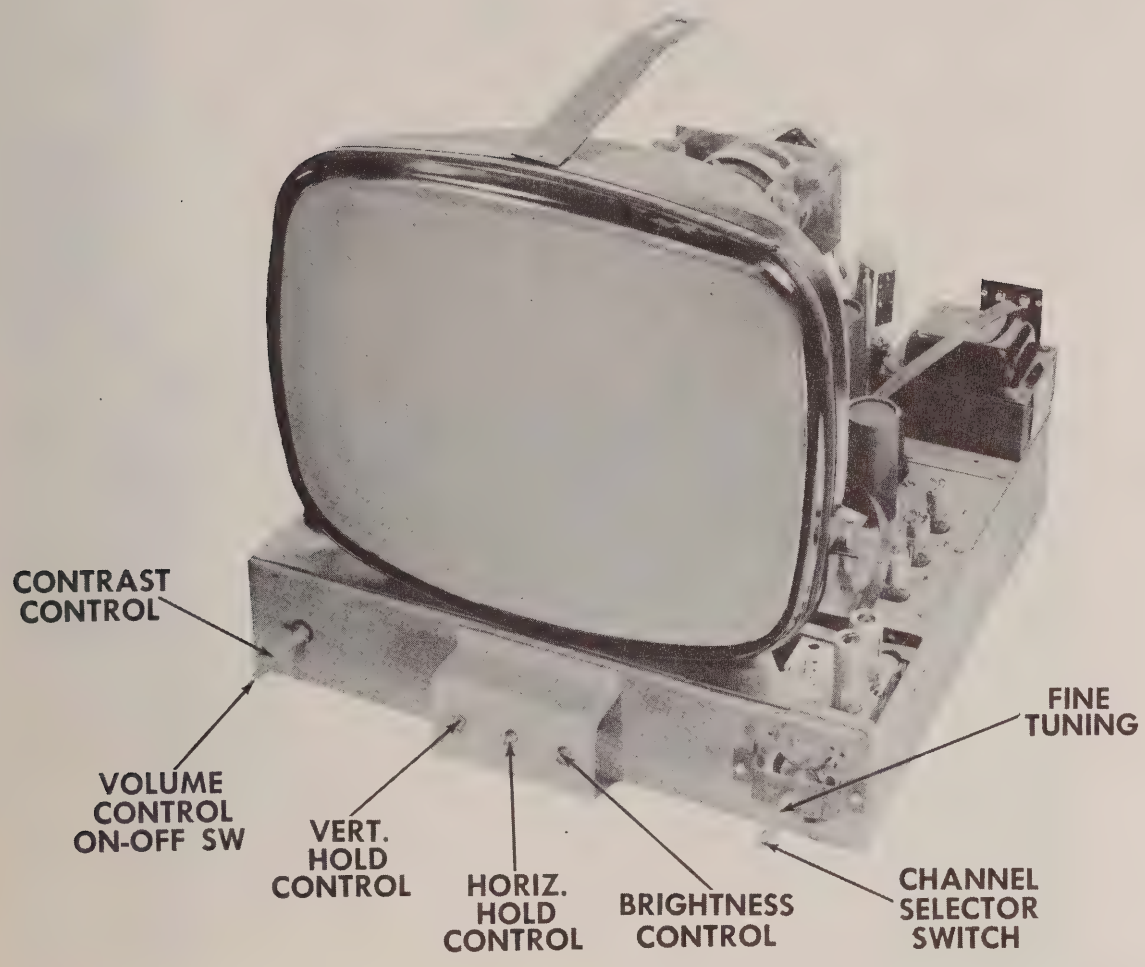
DATE 11-51 SET 150 FOLDER 11

SCOTT (E.H.) MODELS
Ravenswood, 710, 710A, 710X, 910

SCOTT (E.H.) MODELS
Ravenswood, 710, 710A, 710X, 910



SCOTT MODEL 710A

TRADE NAME	Scott, Models 710, 710A, 710X, 910, Ravenswood
MANUFACTURER	Scott Radio Labs., Inc., 4541 Ravenswood Ave., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty or Twenty one
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.7 Amp. at 117 Volts AC
TUNING RANGE—	CHANNELS 2 thru 13

INDEX

Alignment Instructions 6
Horizontal Sweep Circuit Adjustments 10
Parts List and Description 12, 13, 15
Photographs
Cabinet - Rear View 10
Capacitor and Alignment Identification 4, 9
Chassis - Top View 3
Photographs (cont.)
RF Tuner 7
Resistor and Inductor Identification 11, 14
Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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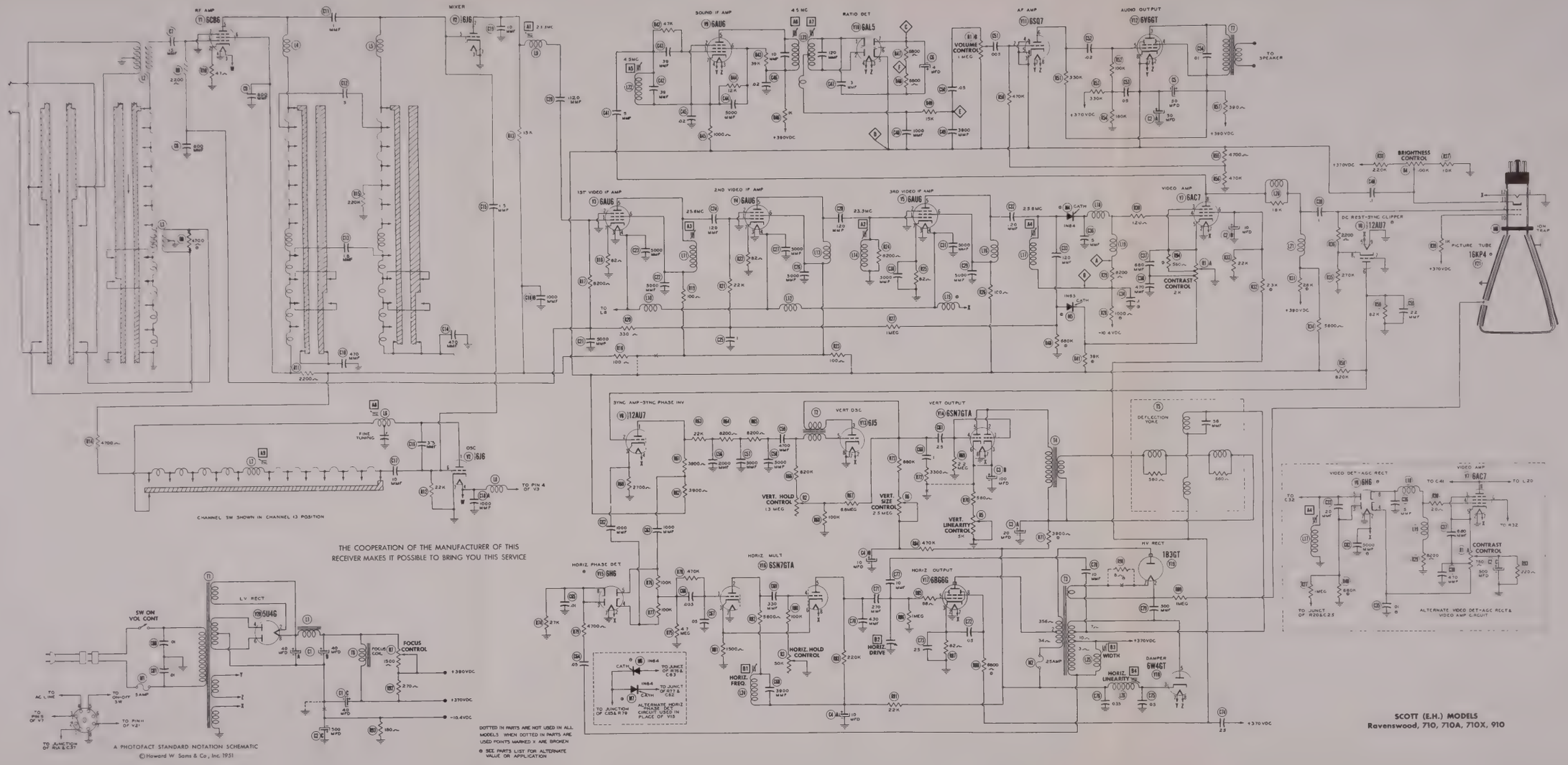
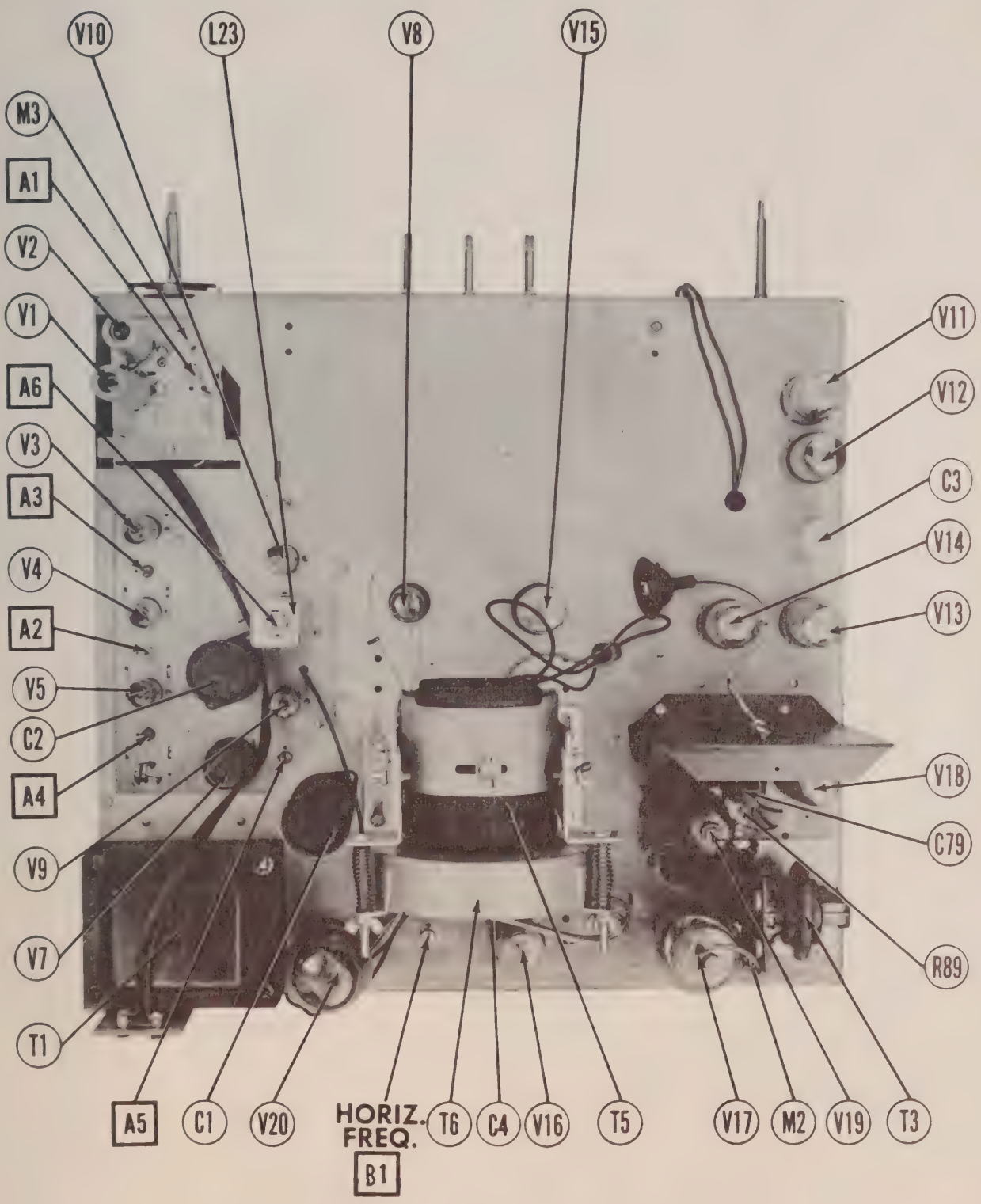
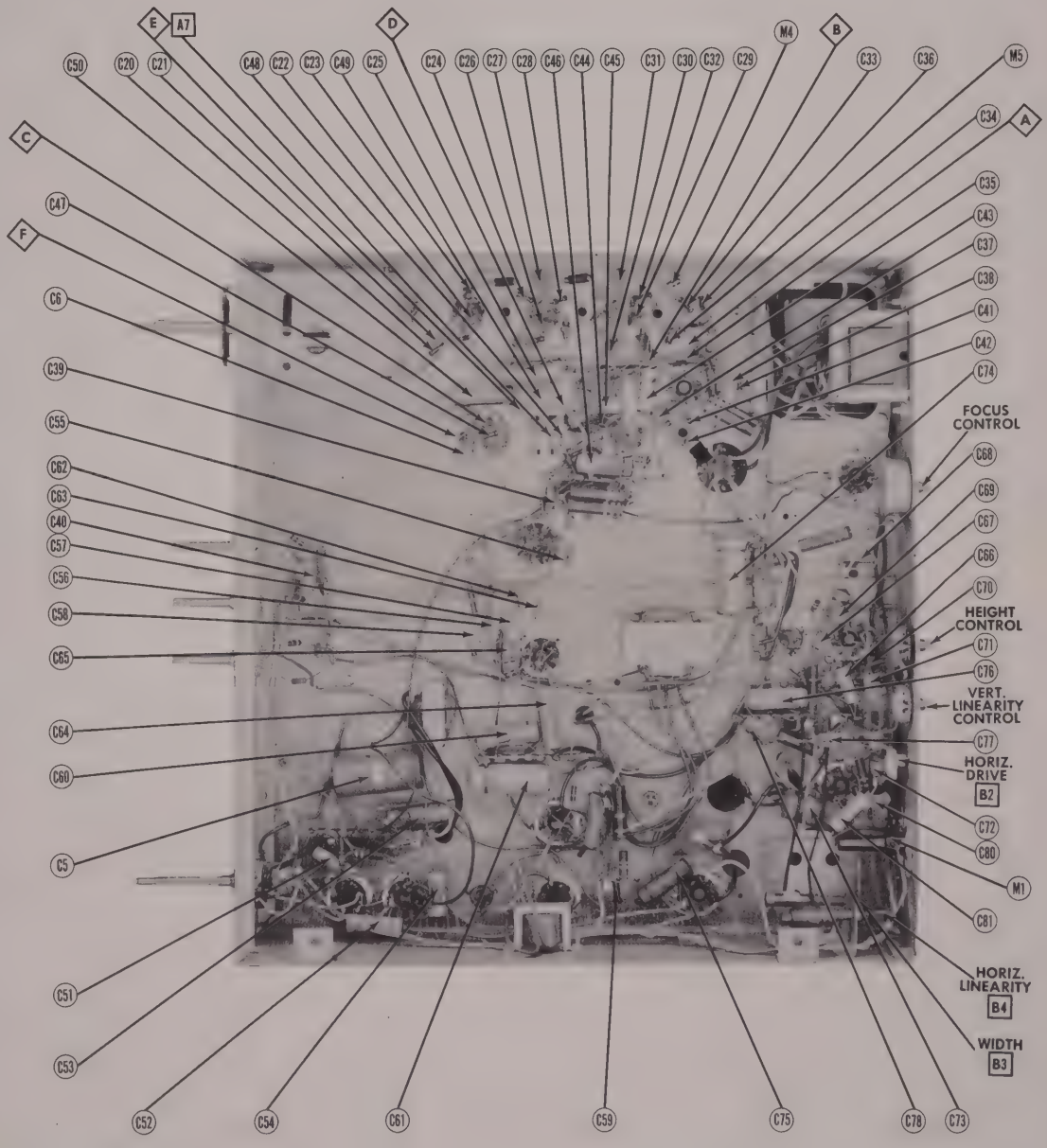


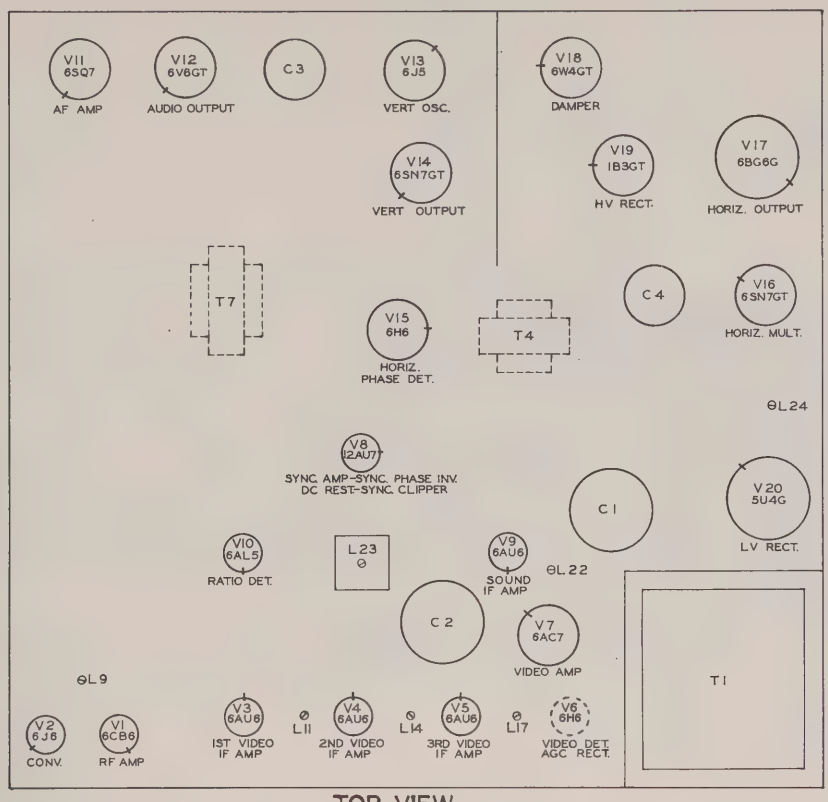
SCOTT (E.H.) MODELS
Ravenswood, 710, 710A, 710X, 910



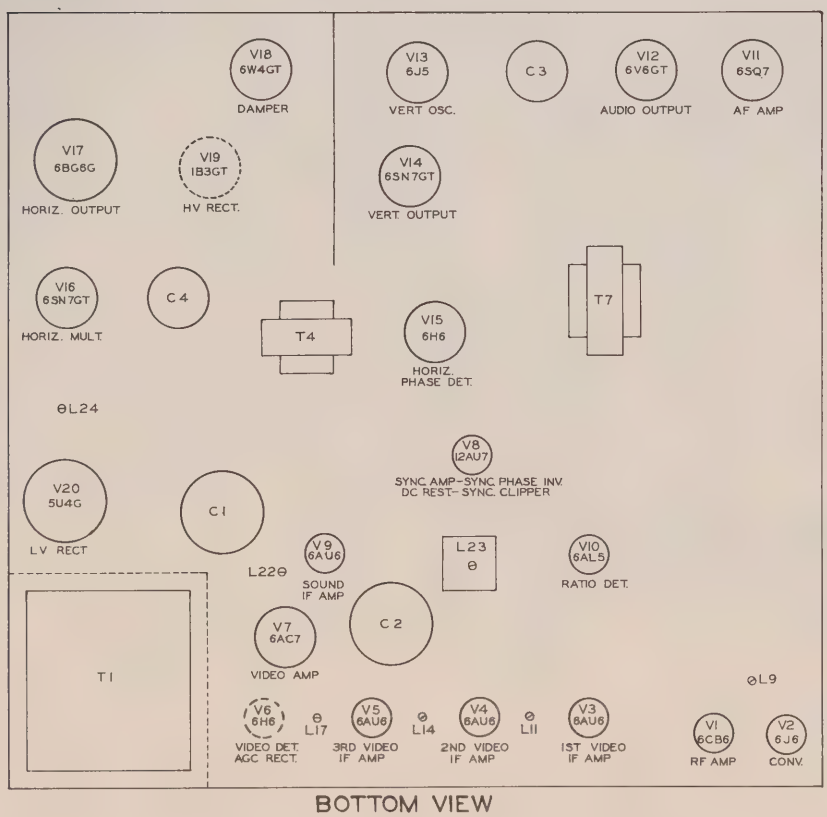
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V16), from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed, this will disable the local oscillator and prevent the possibility of erroneous indications.
During video IF alignment the common lead of the VTVM is connected to approximately 10 volts with respect to chassis. Avoid grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	23.3MC (unmod.)	Any	DC probe to Point (A). Common to Point (B).	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain 1 volt reading, (above noise).
2.	"	"	25.6MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	24MC (10MC SWP)	21.6MC 23MC 26.1MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to approximately 140 volts with respect to chassis. Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD.	High side to pin 4, (Grid) of 6AC7, (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (C). Common to Point (D).	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to Point (E). Common to Point (F).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to pin 4, (Grid) of 6AC7, (V7). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 2.
5.	"	"	"	"	"	Vert. Amp. to Point (E). Low side to chassis.	A7	Reconnect capacitor C6. Adjust A7 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A8	Adjust to place video marker at 50% on response curve as shown in fig. 4.
7.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see that the video marker can be properly placed well within the range of the fine tuning control. If not, make compromise adjustment of A8.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
8.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A9	Adjust to place video marker at 50% on response curve as shown in fig. 4.
9.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see that the video marker can be properly placed well within the range of the fine tuning control. If not, make compromise adjustment of A9.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PRE-SET AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

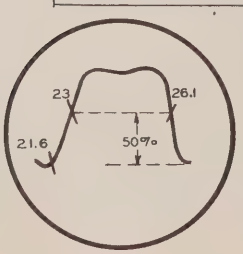


FIG. 1

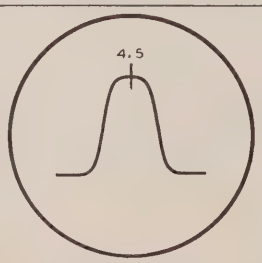


FIG. 2

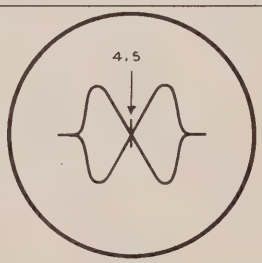


FIG. 3

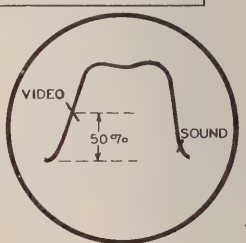
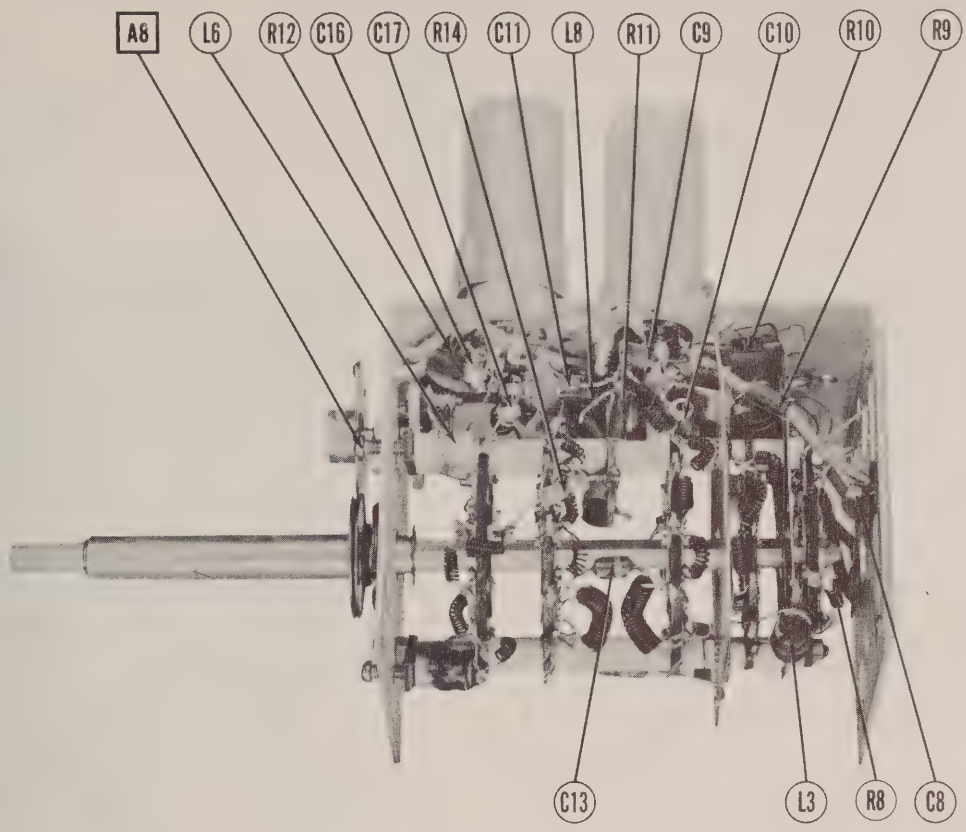
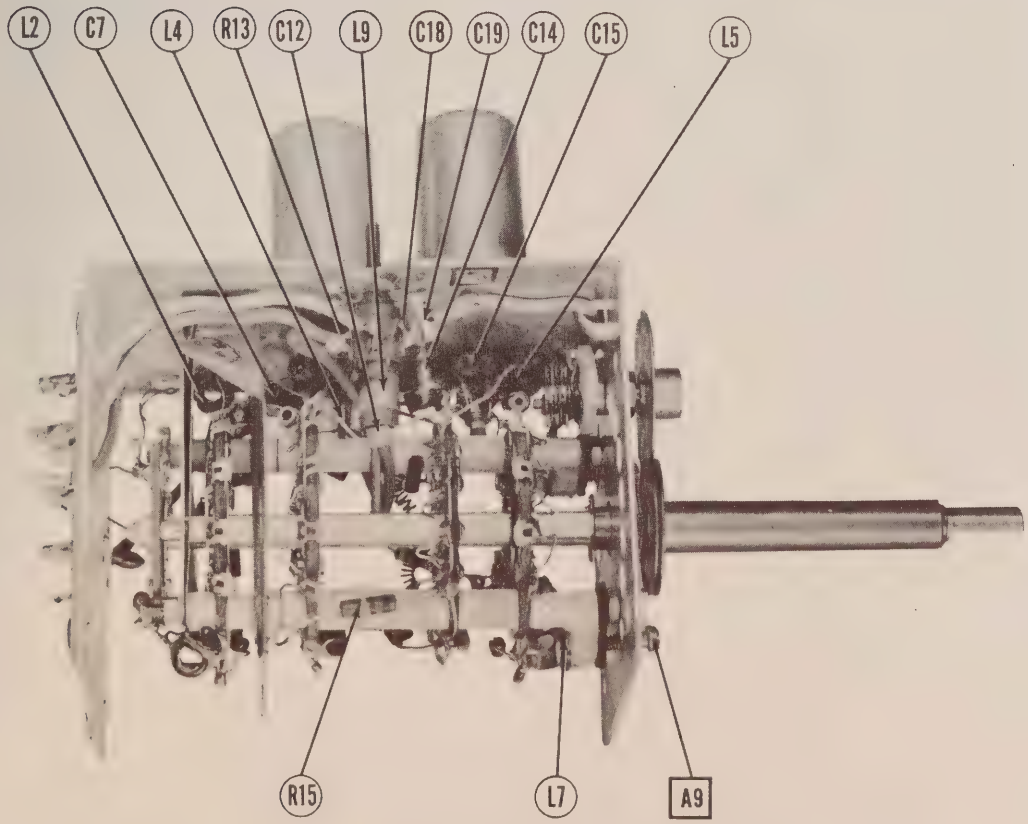


FIG. 4



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.1VDC	.5VDC	6.3VAC	0V	110VDC	110VDC	0V		
V 2	6J6	95VDC	75VDC	0V	6.3VAC	-1.7VDC	§-1.8VDC	0V		
V 3	6AU6	0V	0V	0V	6.3VAC	130VDC	130VDC	.7VDC		
V 4	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.7VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	135VDC	135VDC	.7VDC		
V 6	6H6	NOT USED IN ALL MODELS								
V 7	6AC7	0V	0V	1.7VDC	-2.5VDC	1.7VDC	180VDC	6.3VAC	175VDC	
V 8	12AU7	90VDC	11.3VDC	17VDC	6.3VAC	6.3VAC	14VDC	0V	1.8VDC	0V
V 9	6AU6	▲5.6VDC	▲9.1VDC	▲6.3VAC	▲0V	▲230VDC	▲60VDC	▲9.1VDC		
V 10	6AL5	▲-.2VDC	▲-2.VDC	▲6,3VAC	▲0V	▲0V	0V	▲-.3VDC		
V 11	6SQ7	0V	▲-.7VDC	▲0V	▲0V	▲0V	▲145VDC	▲0V	▲6.3VAC	
V 12	6V6GT	0V	▲6.3VAC	▲205VDC	▲220VDC	▲-7.2VDC	0V	▲0V	140VDC	
V 13	6J5	0V	6.3VAC	100VDC 275VDC	0V	§-15VDC §-25VDC	0V	0V	0V	
V 14	6SN7GT	.2VDC	440VDC	18VDC 34VDC	.2VDC	440VDC	18VDC 34VDC	6.3VAC	0V	
V 15	6H6	0V	6.3VAC	0V	2.5VDC	-1.6VDC	2.5VDC	0V	0V	
V 16	6SN7GT	§.8VDC	310VDC	13VDC	§-9VDC §-14VDC	115VDC	13VDC	0V	6.3VAC	
V 17	6BG6G	0V	0V	6.6VDC	0V	-17VDC	0V	6.3VAC	275VDC	Top Cap *
V 18	6W4GT	0V	0V	560VDC	0V	390VDC	0V	▲0V	▲6.3VAC	
V 19	1B3GT	* DO NOT MEASURE								Top Cap *
V 20	5U4G	0V	400VDC	0V	360VAC	0V	360VAC	0V	400VDC	
V 21	16KP4	0V	1.7VDC	PIN 10 365VDC	PIN 11 14VDC 130VDC	PIN 12 6.3VAC	H.V. CONNECTOR ** 11 K.V.			

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
▲ MEASURED FROM PIN 8 OF V12
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
** USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1Meg	47Ω	.1Ω	0Ω	▲2.4KΩ	▲2.4KΩ	0Ω		
V 2	6J6	▲5KΩ	▲15KΩ	0Ω	.1Ω	220KΩ	22KΩ	0Ω		
V 3	6AU6	1Meg	0Ω	0Ω	.1Ω	▲200Ω	▲200Ω	82Ω		
V 4	6AU6	1Meg	0Ω	0Ω	.1Ω	▲100Ω	▲100Ω	82Ω		
V 5	6AU6	.1Ω	0Ω	0Ω	.1Ω	▲100Ω	▲100Ω	82Ω		
V 6	6H6	NOT USED IN ALL MODELS								
V 7	6AC7	Inf.	0Ω	1KΩ	2.5KΩ	1KΩ	†16KΩ	.1Ω	▲5.3KΩ	
V 8	12AU7	▲7.8KΩ	82KΩ	2.7KΩ	.1Ω	.1Ω	▲100KΩ	0Ω	270KΩ	0Ω
V 9	6AU6	▲48KΩ	▲1KΩ	▲.1Ω	▲0Ω	†1.4KΩ	†18KΩ	▲1KΩ		
V 10	6AL5	Inf.	Inf.	▲.1Ω	▲0Ω	▲0Ω	Inf.	▲7.6KΩ		
V 11	6SQ7	Inf.	▲470KΩ	▲0Ω	▲0Ω	▲0Ω	†330KΩ	▲0Ω	▲.1Ω	
V 12	6V6GT	Inf.	▲.1Ω	†800Ω	†450Ω	280KΩ	Inf.	▲0Ω	22KΩ	
V 13	6J5	Inf.	.1Ω	#3.6Meg #1.1Meg	Inf.	2.2Meg 920Ω	Inf.	0Ω	0Ω	
V 14	6SN7GT	2.2Meg	#3.5KΩ	5.5KΩ 360Ω	2.2Meg	#3.5KΩ	5.5KΩ 560Ω	.1Ω	0Ω	
V 15	6H6	Inf.	.1Ω	27KΩ	4.8Meg	4.8Meg	4.8Meg	0Ω	27KΩ	
V 16	6SN7GT	5.1Meg	#26KΩ	1.5KΩ	150KΩ 100KΩ	#240KΩ	1.5KΩ	0Ω	.1Ω	
V 17	6BG6G	Inf.	0Ω	82Ω	Inf.	1Meg	Inf.	.1Ω	†7.1KΩ	Top Cap #95Ω
V 18	6W4GT	Inf.	Inf.	90KΩ	Inf.	†180Ω	Inf.	▲0Ω	▲.1Ω	
V 19	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								Top Cap #390Ω
V 20	5U4G	Inf.	22KΩ	Inf.	47Ω	Inf.	48Ω	Inf.	22KΩ	
V 21	16KP4	0Ω	270KΩ	PIN 10 †1.2KΩ	PIN 11 †100KΩ †20KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 2 OF V20
# MEASURED FROM 3 OF V18
▲ MEASURED FROM PIN 8 OF V12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

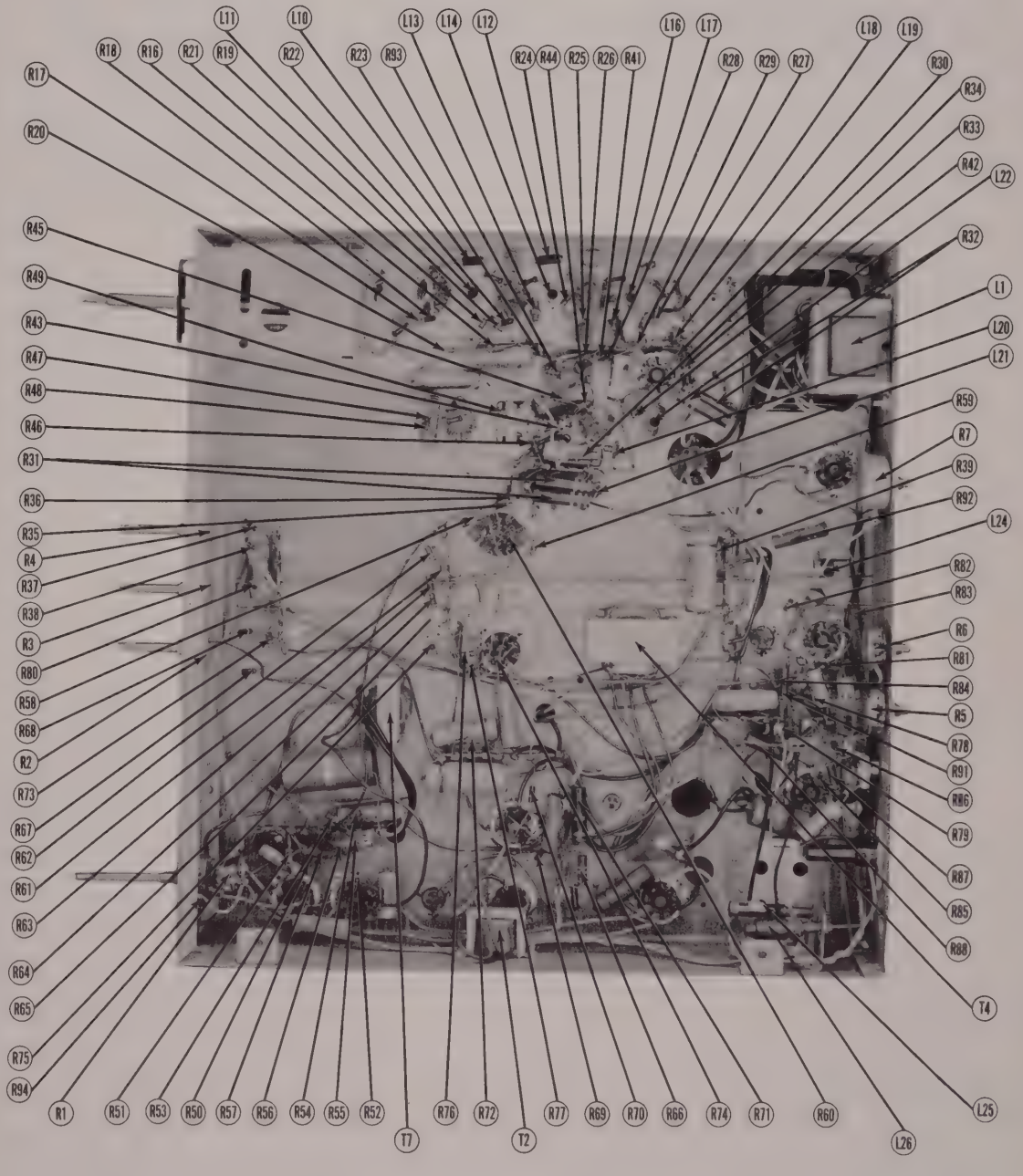
Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), to approximately the center of its range.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

Since width and horizontal linearity are effected by the drive trimmer, it may be necessary to adjust B2, B3, and B4 alternately for best results.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	7CM	
V2	Converter	92G3199	6J6	7BF	
V3	1st. Video IF Amp.	92C2659	6AU8	7BK	
V4	2nd. Video IF Amp.	92C2659	6AU8	7BK	
V5	3rd. Video IF Amp.	92C2659	6AU8	7BK	
V6	Video Detector-AGC Rectifier	92A229	6H6	7Q	Used in some models
V7	Video Amplifier	92A235	6AC7	8N	
V8A	DC Restorer-Sync. Clipper-Sync. Amp. Sync. Phase Inv.	92L3501	12AU7	9A	
B	DC Restorer-Sync. Clipper-Sync. Amp. Sync. Phase Inv.	92A230	6SN7GT	8BD	
V9	Sound IF Amp.	92C2759	6AU8	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	AF Amplifier	92E1791	6V6GT	6J	
V12	Audio Output	92E1061	6V6GT	7AC	
V13	Vert. Oscillator	92A228	6J5	6Q	
V14	Vert. Output	92A230	6SN7GTA	8BD	
V15	Horiz. Phase Det.	92A229	6H6	7Q	Used in some models.
V16	Horiz. Mult.	92A230	6SN7GTA	8BD	
V17	Horiz. Output	92L3266	6BG6G	5BT	
V18	Damper	92W5010	6W4GT	4CG	
V19	HV Rectifier	92G2875	1B3GT	3C	
V20	LV Rectifier	92A234	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: SCOTT PART No	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V21A	20DP4	17BP4	17BP4	12D	
B	17BP4	17BP4	16KP4 ②	12D	② Space permitting
C	16TP4	16TP4	16KP4	12D	
D	16KP4	16KP4	16KP4	12D	
E	16RP4	16RP4	16KP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	15W4980	AFH3-44		UPT44445		TVL-3787	▲ Filter
B	40	450							■ Filter
C	40	450							▲ Filter
C2A	50	350	15W4981	AFH3-168		UPT302		TVL-2735	▲ Decoupling
B	10	250						TVA-1103	■ Video Amp. Screen
C	500	5							▲ Bias Filter
C3A	20	450	15W4983	AFH1-50		UPTU150-V10		TVL-1714 TVA-1207	■ Vert. Amp. Decoupling ▲ Vert. Amp. Cathode
B	100	25		PRB25/100					■ Horiz. MV Decoupling
C4A	10	450	15W4982	AFH2-47		UPT1145		TVL-2750	▲ Filter
B	10	450							▲ Decoupling
C5	50	350	15W4984	PRB450/40		BR4035		TVA-1613	Audio Output Decoupling
C6	4	50	15W4979	PRB150/4		BR550		TVA-1303	Stabilizing Cap.
C7	15			SII5	D6-150		GP1K-150	5GA-Q15	RF Coupling
C8	800			BPD-0008	DD-801				AGC Filter
C9	800			BPD-0008	DD-801				RF Amp. Screen
C10	470			SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Plate
C11	1				TCZ-1		NP0K-010		RF Coupling
C12	.5				TCZ-.5		NP0K-R50		RF Coupling
C13	1.8						NP0K-1R8		RF Coupling
C14	470			SI470	D6-471		GP2K-471	5GA-T47	Mixer Grid Filter
C15	1.5			SII.5NP0	TCZ-1.5		NP0K-1R5		Osc. Coupling
C16	3.5						N080-331-3R5		Fixed Trimmer
C17	10			SII0NP0	TCZ-10		NP0K-100	STCC-Q1	Osc. Grid Cap.
C18A	1000			BPD-2X00	DD-2-102		812-001	5HK-2D1	Conv. Fil.
B	1000								RF Bypass
C19	10			SII0NP0	TCZ-10		NP0K-100	STCC-Q1	Fixed Trimmer
C20	120		1W54971	SII20	D6-121	5W5T15	GP2K-121	5GA-T12	RF Coupling
C21	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Filter
C22	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Dec.
C23	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Video IF Fil.
C24	120		15W4971	SII20	D6-121	5W5T15	GP2K-121	5GA-T12	IF Coupling
C25	.1	600	15A409	P688-1	DF-104	PTE6P1		6TM-P1	AGC Filter
C26	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Dec.
C27	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Video IF Fil.
C28	120		15W4971	SII20	D6-121	5W5T15	GP2K-121	5GA-T12	IF Coupling
C29	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Dec.
C30	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Cathode
C31	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Fil.
C32	120		15W4971	SII20	D6-121	5W5T15	GP2K-121	5GA-T12	IF Coupling
C33	120		15W4971	SII30	D6-121	5W5T15	GP2K-121	5GA-T12	IF Coupling
C34	.1	600	15A409	P688-1	DF-104	PTE6P1		6TM-P1	Bias Filter *
C35	.01	600	15E1050	P688-01	DF-103	PTE6S1	GP2-333-103	6TM-S1	RF Bypass *
C36	5		15D3068	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C37	680		15W4972	SII80	D6-680	1W5T7	GP2K-681	5GA-T68	Contrast Cont. Shunt
C38	470		15P3930	SI470	D6-470	5W5T5	GP2K-471	5GA-T47	Video Amp. Cathode
C39	.1	600	15A409	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C40	.1	600	15A409	P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cathode
C41	5		15D3086	SI5		5W5Y5	GP1K-050		Sound IF Coupling
C42	39	500	15W4986	1469-00004		SR5Q4		MS-44	Fixed Trimmer
C43	39	500	15W4986	1469-00004		SR5Q4		MS-44	Sound IF Coupling
C44	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Screen
C45	.02	600	15E1001	P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Cathode Dec.
C46	.02	600	15E1001	P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Plate Dec.
C47	3		15W4970	SI3NP0			NP0K-030		Balancing Cap.
C48	1000		15W4973	SII000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C49	3900		15W4975	SI4000	D6-402	1D5D4	GP2-333-402		De-emphasis
C50	.05	600	15L3644	P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C51	.005	600	15E1002	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C52	.02	600	15E1001	P688-03	DF-303	PTE6S3		6TM-S2	Audio Coupling
C53	.05	600	15L3644	P688-05	DF-503	PTE6S5		6TM-S5	Audio Output Grid
C54	.01	600	15E1050	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C55	22	500	15W4985	1469-000025	CTCZ-22	SR5Q25	MP0K-220	MS-425	Sync. Clipper Plate
C56	2000		15W4974	SI2000	D6-202	1W5D2	GP2-333-202	5HK-D2	Vert. Integrator Net.
C57	5000		15W4977	SI5000	D6-502	1D5D5	GP2-333-502	5HK-D5	Vert. Integrator Net.
C58	5000		15W4977	SI5000	D6-502	1D5D5	GP2-333-502	5HK-D5	Vert. Integrator Net.
C59	4700		15W4976	SI4700	D6-472	1D5D5	GP2-333-472	5HK-D47	Vert. Osc. Grid
C60	.1	600	15A409	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C61	.25	600	15D2915	684-25		GT6P25		6TM-P25	Vert. Sweep Coupling
C62	1000		15W4973	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C63	1000		15W4973	SI1000	D6-102	1W5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C64	.05	600	15L3644	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C65	.01	600	15E1050	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Integrator Net.
C66	.005	600	15E1002	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C67	.05	600	15L3644	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. MV Grid
C68	3900	500	15A39	1464-004		1DR5D4			Fixed Trimmer
C69	330	500	15W4988	1469-00035					Horiz. MV Feedback
C70	430	500	15W4989						Horiz. Discharge
C71	270	500	15W4987	1468-0003	D6-271	5W5T3	GP2K-271	M6-33	Horiz. Sweep Coupling
C72	.05	600	15L3644	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C73	.25	600	15D2915	684-25		GT6P25		6TM-P25	Horiz. Output Cathode
C74	.25	600	15D2915	684-25		GP6P25		6TM-P25	Horiz. Sweep Coupling
C75	.05	600	15L3644	P688-05	DF-503	PTE6S5		6TM-S5	Damper Filter
C76	.035	600	15L3643	P688-033		PTE6S5			Damper Filter
C77	10	1500	15W4990						Horiz. Feedback
C78	10	1500	15W4990						Horiz. Feedback
C79	500	15000	15W4978	HV30-C	TV3-502				HV Filter
C80	.01	600	15E1050	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C81	.01	600	15E1050	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Line Filter
C82	5000		15L3482	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Video Det. Fil. *

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	2000Ω	½	18A7917O5		RTV-116		Contrast Control
B	1Meg	½					Volume Control and Switch
R2A	1.3Meg	½	VC11232		AG-83-S	AN-69	Vertical Hold Control
B	Shaft		Not req.		KS8-3	AK-4	Attach to R2A per instructions
R3A	50KΩ	½	VC11231	Q11- 123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R3A per instructions
R4A	100KΩ	½	VC11230	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not req.	Not req.	RS-2	AK-4	Attach to R4A per instructions
R5A	5000Ω	½	VC11230	Q11-114	AG-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not req.	RQ	FK8-1/4	AK-1	Attach to R4A per instructions
R6A	2.5Meg	½	VC11231	Q11-239	AG-84-S	AN-83	Vertical Size Control
B	Shaft		Not req.	RQ	FK8-1/4	AK-1	Attach to R6A per instructions
R7	1500Ω	4	VC11222		RTV-6	8V8-928	Focus Control - Wire Wound

RESISTORS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 20% UNLESS OTHERWISE SPECIFIED
R8	4700Ω 10%	½	70L3395	BTS-4700	Antenna Coil Shunt - See Note 1
R9	2200Ω	½	70L3432	BTS-2200	RF Amp. Grid
R10	47Ω 10%	½			RF amp. Cathode
R11	2200Ω	½	70L3432	BTS-2200	Decoupling
R12	22KΩ	½	70L3397	BTS-22K	Osc. Grid
R13	15KΩ	½	70L3529	BTS-15K	Mixer Plate
R14	4700Ω 10%	½	70L3395	BTS-4700	Osc. Plate
R15	220KΩ	½	70L3403	BTS-220K	Mixer Grid
R16	100Ω	½	70L3430	BTS-100	Decoupling
R17	8200Ω	½	70L3523		1st. Video IF Amp. Grid
R18	82Ω	½	70L3391	BTS-82	1st. Video IF Amp. Cathode
R19	100Ω	½	70L3430	BTS-100	1st. Video IF Amp. Decoupling
R20	330Ω	½	70H2615	BTS-330	AGC Network
R21	22KΩ	½	70L3397		2nd. Video IF Amp. Grid
R22	82Ω	½	70L3391	BTS-82	2nd. Video IF Amp. Cathode
R23	100Ω	½	70L3430	BTS-100	2nd. Video IF Amp. Decoupling
R24	8200Ω	½	70L3523		3rd. Video IF Amp. Grid
R25	82Ω	½	70L3391	BTS-82	3rd. Video IF Amp. Cathode
R26	100Ω	½	70L3430	BTS-100	3rd. Video IF Amp. Decoupling
R27	1Meg	½	70A63	BTS-1Meg	AGC Network
R28	1000Ω 10%	½	70L3393	BTS-1000	Bias Network - See Note 1
R29	8200Ω	½	70L3523	BTS-8200	Video Amp. Grid
R30	120Ω	½	70W5003		Parasitic Suppressor
R31	28KΩ	4	70L3532		Video Amp. Plate - See Note 2
R32	23KΩ	3	70L3531		Video Amp. Screen - See Note 2
R33	22KΩ	1	70P3963	BTA-22K	Voltage Divider
R34	5600Ω	1	70L3455	BTA-5600	Voltage Divider
R35	270KΩ	½	70A60	BTS-270K	DC Restorer Load
R36	2200Ω	½	70L3432	BTS-2200	Picture Tube Grid
R37	10KΩ	½	70L3396	BTS-10K	Picture Tube Cathode
R38	220KΩ 10%	½	70L3403	BTS-220K	Voltage Divider
R39	1000Ω 10%	½	70L3393	BTS-1000	Acc. Anode Load
R40	680KΩ	½	70V4691	BTS-680K	AGC Diode Load - See Note 1
R41	39KΩ 10%	1	70B653	BTS-39K	Voltage Divider - See Note 1
R42	47KΩ 10%	½	70L3399		Sound IF Grid
R43	39KΩ	1	70B653	BTA-39K	Sound IF Screen
R44	12KΩ	½	70W5007	BTS-12K	Voltage Divider
R45	1000Ω	½	70L3393	BTS-1000	Sound IF Amp. Cathode
R46	1000Ω	½	70L3393	BTS-1000	Sound IF Amp. Cathode
R47	6800Ω	½	70D2770	BTS-6800	Ratio Detector Diode Load
R48	6800Ω	½	70D2770	BTS-6800	Ratio Detector Diode Load

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R49	15KΩ 10%	½	70L3529	BTS-15K	De-emphasis
R50	470KΩ	½	70L3404	BTS-470K	AF amp. Grid
R51	330KΩ	½	70H2615	BTS-330K	AF Amp. Plate
R52	100KΩ	½	70A58	BTS-100K	Output Grid
R53	330KΩ 5%	½	70H2615	BTS-330K	Voltage Divider
R54	180KΩ 5%	½	70W5008	BTS-180K	Bias Network
R55	4700Ω	½	70L3395	BTS-4700	Bias Network
R56	470KΩ	½	70L3404	BTS-470K	Bias Network
R57	390Ω	½	70W5006	BTA-390	Output Decoupling
R58	820KΩ 10%	1		BTA-820K	Sync. Clipper Plate
R59	82KΩ 10%	½	70A57	BTS-82K	Sync. Phase Inverter Grid
R60	2700Ω 10%	½	70W5008	BTS-2700	Sync. Phase Inverter Plate
R61	3900Ω	½	70L3528	BTS-3900	Sync. Phase Inverter Cathode
R62	3900Ω	½	70L3528	BTS-3900	Sync. Phase Inverter Plate
R63	22KΩ	½	70P3963	BTS-22K	Integrator
R64	8200Ω	½	70L3523	BTS-8200	Integrator
R65	8200Ω	½	70L3523	BTS-8200	Integrator
R66	820KΩ 10%	½	70L3518	BTS-820K	Vertical Osc. Grid
R67	6 8Meg	½	70W5009	BTS-6.8Meg	Voltage Divider
R68	100KΩ	½	70A58	BTS-100K	Voltage Divider
R69	2.2Meg	½	70L3408	BTS-2.2Meg	Vertical Output Grid
R70	560Ω	½	70A46	BTS-560	Vertical Output Cathode
R71	3900Ω	2	70L3425	BTB-3900	Vertical MV Output Plate Decoupling - See Note 3
R72	3300Ω	1	70L3394	BTS-3300	Vertical Peaking
R73	680KΩ	½	70V4691	BTS-680K	Voltage Divider
R74	27KΩ	½	70L3413	BTS-27K	Horiz. Feedback
R75	6.7Meg	½	70L3530	BTS-6.7Meg	Horiz. Phase Detector Diode Load
R76	100KΩ	½	70A58	BTS-100K	Horiz. Phase Detector Diode Load
R77	100KΩ	½	70A58	BTS-100K	Horiz. Phase Detector Diode Load
R78	470KΩ	½	70L3404	BTS-470K	AFC Filter
R79	470KΩ	½	70L3395	BTS-4700	Horiz. Feedback
R80	100KΩ	½	70A58	BTS-100K	Horiz. MV Grid
R81	150KΩ 10%	½	70A48	BTS-150K	Horiz. MV Cathode
R82	5600Ω	½	70L3523	BTS-5600	Horiz. MV Plate
R83	220KΩ 10%	½	70L3403	BTS-220K	Horiz. MV Plate
R84	470KΩ	½	70L3404	BTS-470K	Bias Filter
R85	68Ω 10%	½	70E1195		Parasitic Suppressor
R86	1Meg	½	70A63	BTS-1Meg	Horiz. Output Grid
R87	82Ω	1	70W5002		Horiz. Output Cathode
R88	6800Ω	2		BTB-6800	Horiz. Output Screen - See Note 4
R89	1Meg	1		BTA-1Meg	HV Filter
R90	80	½			MV Filament - See Note 1
R91	22KΩ	1	70P3963	BTA-22K	Horiz. MV Decoupling
R92	270Ω	2	70W5004		Focus Coil Shunt
R93	180Ω	½		BTS-180Ω	Bias Filter
R94	56Ω	2	70A46	BTS-560	Contrast Control Shunt - See Note 1

Note 1 Not used in all models.
Note 2 Some models use resistors in parallel to obtain desired value.
Note 3 Some models use 5600Ω 2 watt resistor in this application.
Note 4 Some models use 8200Ω 2 watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC 2	RATING: SEC. 3	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	760VCT	5VAC	6.3VAC	91W5019		P-3059	
▲ 1 7A		.220ADC	② 3A	▲ 2.5A				
				SEC. 4				
				6.3VAC				
				② 5.8A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI	RATING: DC RESISTANCE SEC	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	165Ω	940Ω	91W5018	A-811①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	390Ω	200	91W5014		HVO-7		Horiz. Output Trans.
	Tap 34Ω	Taps 3Ω and 13Ω					
		SEC. 2					
		0Ω					
T4	830Ω	13Ω	91W5017	A-812 ①	A-3036 ①	TSO-5 ①	Vert. Output Trans.
T5A	13Ω		98W5031	DY-7	MDF-70		Horiz. Deflection Coils
B	62Ω						Vert. Deflection Coils
T6	300Ω				MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI	RATING: DC RES. SEC	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T7	3.9KΩ	3 2Ω	360Ω	.6Ω	91W5011	A-3877	A-2930	RO-9 ①	① Drill one new mounting hole.

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	SCOTT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.220A	33Ω	1 Henry	17W5000	C-2326 ①	C-2996 ①	TR-3300 ①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SCOTT PART No.	IRC PART No.	
L2	Ant. Coil	0Ω	0Ω			
L3	Ant. Coil	0Ω	0Ω			
L4	RF Coil	0Ω				
L5	Mixer Grid Coil	0Ω				
L6	Osc. Coil	0Ω				
L7	Osc. Coil	0Ω				
L8	Fil. Choke	.2Ω			CLA	.47 Microhenry
L9	1st. Video IF	.4Ω				
L10	Fil. Choke	0Ω		17W4998		
L11	2nd. Video IF	.1Ω		91W5020		
L12	Fil. Choke	0Ω		17W4998		
L13	RF Choke	4Ω		17W4999		37 Microhenries
L14	3rd. Video IF	.1Ω		91W5020		
L15	Fil. Choke	0Ω		17W4998		Not used in all models
L16	RF Choke	4Ω		17W4999		37 Microhenries
L17	4th. Video IF	.1Ω		91W5020		
L18	Peaking	8.2Ω		17W4993		120 Microhenries
L19	Peaking	20Ω		17W4995		600 Microhenries
L20	Peaking	9Ω		17W4997		150 Microhenries wound on 18KΩ resistor
L21	Peaking	13Ω		17W4994		300 Microhenries
L22	Sound IF	2.6Ω		20W5021		
L23	Ratio Det. Trans.	4.1Ω	.1Ω	91W5022		Tap .5Ω
L24	Horiz. Osc.	100Ω		20W4996		
L25	Width Coil	.6Ω		20W5012		
L26	Horiz. Lin.	30Ω		20W5013		

FUSES

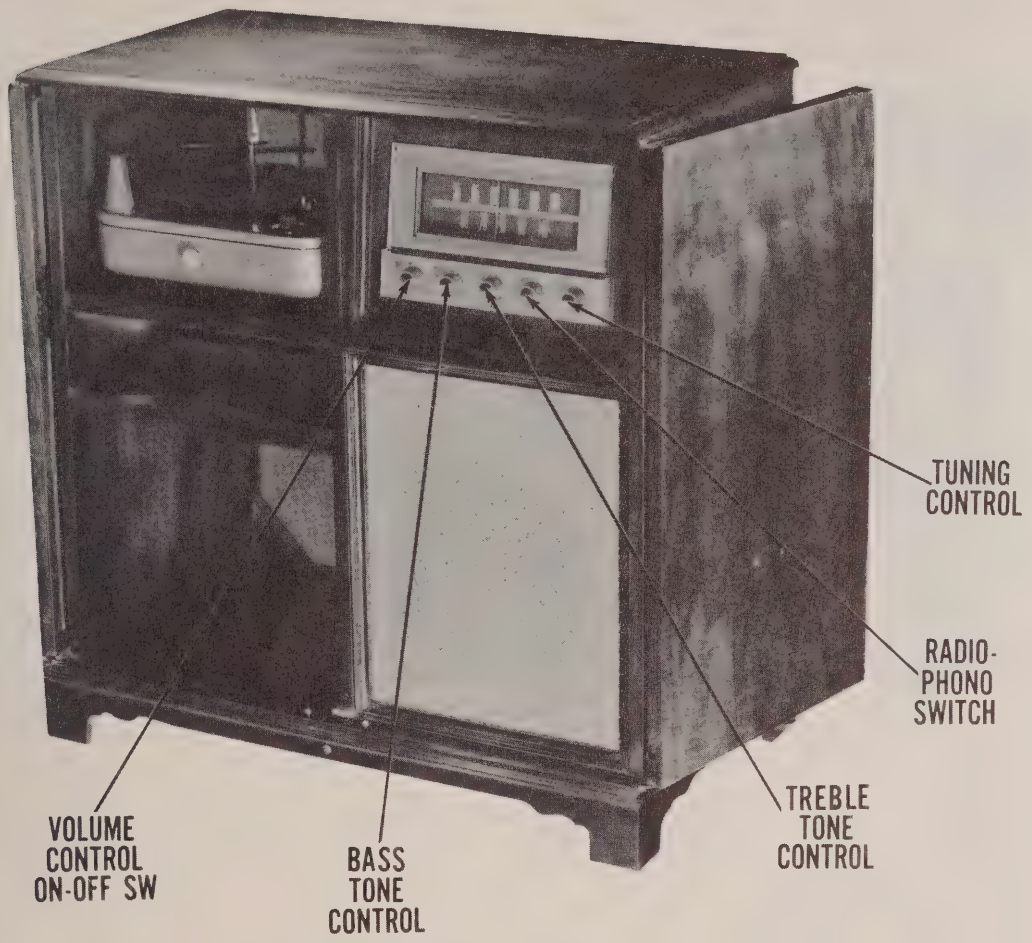
ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			SCOTT PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	5A	37E1164		312005	341001	
M2	3AG Pigtail	.250	3754276		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	SCOTT PART No.	NOTES
M3	RF Tuner	2W5023	
M4	Crystal		1N64 } Some models use 6H6 in place
M5	Crystal		1N65 } of these two crystals.
M6	Crystal		1N64 Some models use 6H6 tube
M7	Crystal		1N64 Some models use 6H6 tube
M8	Ion Trap	97S4286	
	Knob	47W4796	Fine Tuning
	Knob	47W4797	Channel Selector
	Knob	47W4798	Off/On-Volume
	Knob	47W4799	Contrast
B2	Trimmer	15W4991	25-280MMF. (Horiz. Drive)

STROMBERG-CARLSON MODEL 1608

STROMBERG-CARLSON MODEL 1608



STROMBERG-CARLSON MODEL 1608

TRADE NAME	Stromberg-Carlson, Model 1608
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester, New York
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop antenna
TUBES (EIGHT)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 Det.-AVC-Phase Inv., 6AV6 AF Amp., (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .725 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and center the pointer over the colored square at the left hand end of the dial scale. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD.	High side to stator on center section of tuning gang. Low side to chassis.	455KC (400~ Mod.)	1000KC	Across Voice Coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1400KC	1400KC	"	A5, A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 950 IN PHOTOFACT SET 107 FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STROM-CARL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det. -AVC- Phase Inv.	6AV6	6AV6	7BT	
V5	AF Amplifier	6AV6	6AV6	7BT	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Power Output	6V6GT	6V6GT	7AC	
V8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STROM-CARL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450	111090	AFH4-76		UPT42245		TVL-4732	▲ Filter
B	20	450				C4			■ Filter
C	40	350							▲ Filter
D	25	25							Audio Output Cathode
C2	100		110694	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	RF Coupling
C3	.05	400	110801	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C4	47		110695	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Osc. Grid Cap.
C5	.05	400	110801	P488-05	DF-503	PTE4S5		4TM-S5	Decoupling
C6	.003	400	110698	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	IF Amp. Decoupling
C7A	100		♦ 110478	SI100	♦PC-50	5W5T1	GP1K-101	♦100C1	Diode RF Filter
B	100			SI100		5W5T1	GP1K-101		Diode RF Filter
C8	330		110463	SI330	D6-331		GP2K-331	5GA-T33	Tone Comp.
C9	.01	400	110687	P488-01	D6-103	PTE6S1	GP2-333-103	4TM-S1	Audio Coupling
C10	.005	400	110688	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C11	.005		128201 †	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C12	100		110694	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	AF Amp. Plate
C13	.005	400	110688	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C14	.01	600	110806	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.
C15	750		110676	SI750	D6-751		GP2L-751		Audio Coupling
C16	.005		128201 ‡	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C17	100		110694	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Phase Inv. Plate
C18	.01	600	110806	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C19	.002	600	110804	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate

♦ Items C7A, C7B, R11 are combined in one unit.
† Items C11 and R15 are combined in one unit.
‡ Items C16 and R17 are combined in one unit.

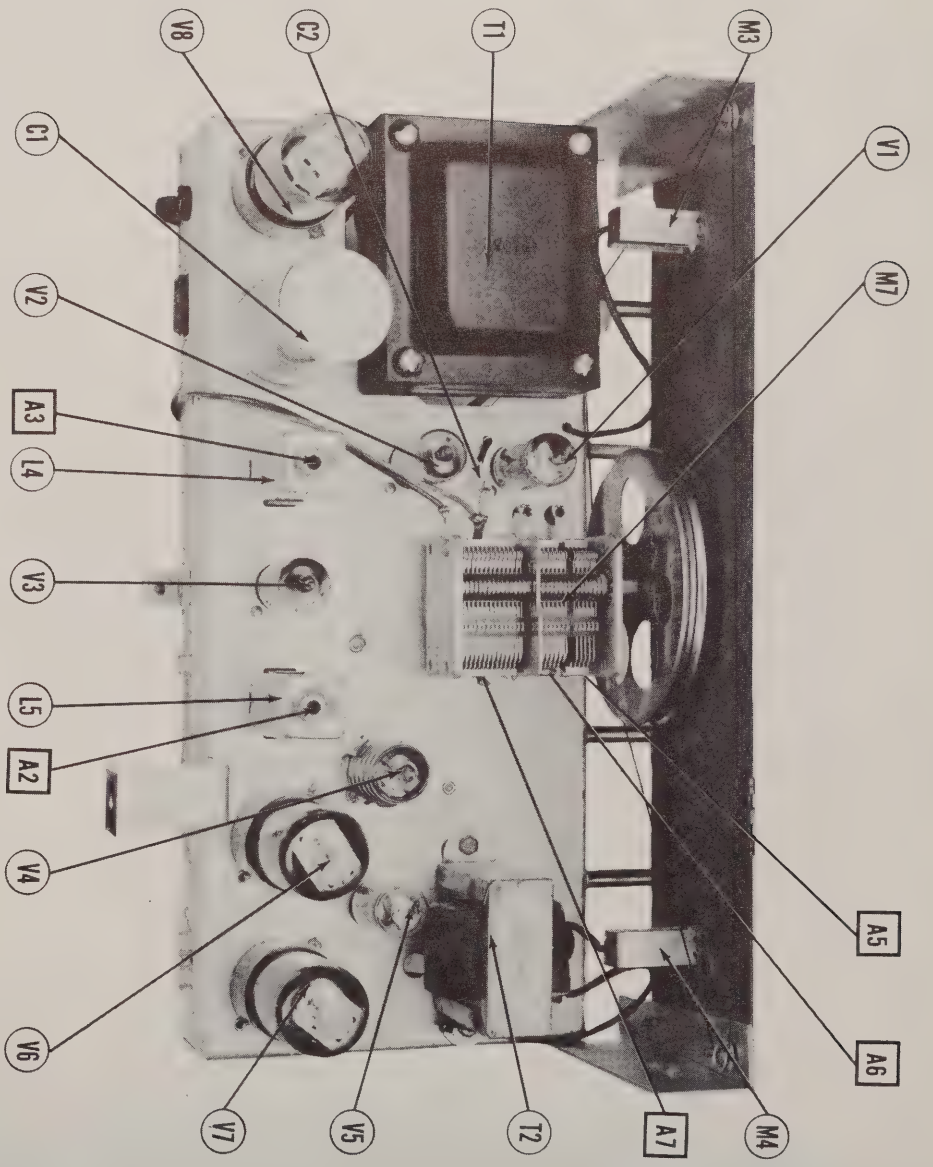
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Strom-Carl PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	145135	Q19-137X	AT-102	BT-74-S	Volume Control - Tapped at 500KΩ
B	Switch		Not req.	76-1	SWA	Not req.	Attach to R1A per instructions
C	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R1A per instructions
R2A	2Meg	½	145136		AG-83-S	B-77	Bass Tone Control
B	Shaft		Not req.		FS-3	Not req.	Attach to R2A per instructions
R3A	1Meg		145137	Q13-137	AG-63-Z	B-70	Treble Tone Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STROM-CARL PART No.	IRC PART No.	IDENTIFICATION CODES
R4	2.2Meg	½	149121	BTS-2.2Meg	RF Amp. Grid
R5	68Ω	½	149094		RF Amp. Cathode
R6	22KΩ	½	149109	BTS-22K	Osc. Grid
R7	2.2Meg	½	149121	BTS-2.2Meg	AVC Network
R8	2.2Meg	½	149121	BTS-2.2Meg	AVC Network
R9	68Ω	½	149094		IF Amp. Cathode
R10	1000Ω	½	149101	BTS-1000	IF Amp. Decoupling
R11	47KΩ	½	110478 ♦	BTS-47K	Diode Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	STROM-CARL PART No.	IRC PART No.	
R12	470KΩ	½	149117	BTS-470K	Diode Load
R13	470KΩ	½	149117	BTS-470K	Tone Compensation
R14	22KΩ	½	149109	BTS-22K	Tone Compensation
R15	10Meg	½	128201 †	BTS-10Meg	AF Amp. Grid
R16	220KΩ	½	149115	BTS-220K	AF Amp. Plate
R17	10Meg	½	128201 ‡	BTS-10Meg	Phase Inv. Grid
R18	220KΩ	½	149115	BTS-220K	Phase Inv. Plate
R19	1000Ω	½	149101		Parasitic Suppressor
R20	1000Ω	½	149101		Parasitic Suppressor
R21	470KΩ	½	149117	BTS-470K	Output Grid
R22	470KΩ	½	149117	BTS-470K	Output Grid
R23	330Ω	2	149020	BTB-330	Output Cathode
R24	8200Ω	½	28169	BTS-8200	Output Grid
R25	4000Ω	5	149330	1 3/4A-4000	Filter - Wire Wound
R26	1000Ω	2	149076	BTB-1000	Filter

♦ Items R11, C7A, and C7B are combined into one unit.
† Items R15 and C11 are combined into one unit.
‡ Items R17 and C16 are combined into one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	STROM-CARL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .725A	640VCT .081ADC	5VAC @ 2A	6.3VAC @ 3.2A	161032	PM8409 ①	P-2851	

① Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Strom-Carl PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6.5K CT	3.8Ω	340Ω CT	.2Ω	161261	A-3823	A-2936	RO-110 ②	② Drill one new mounting hole.

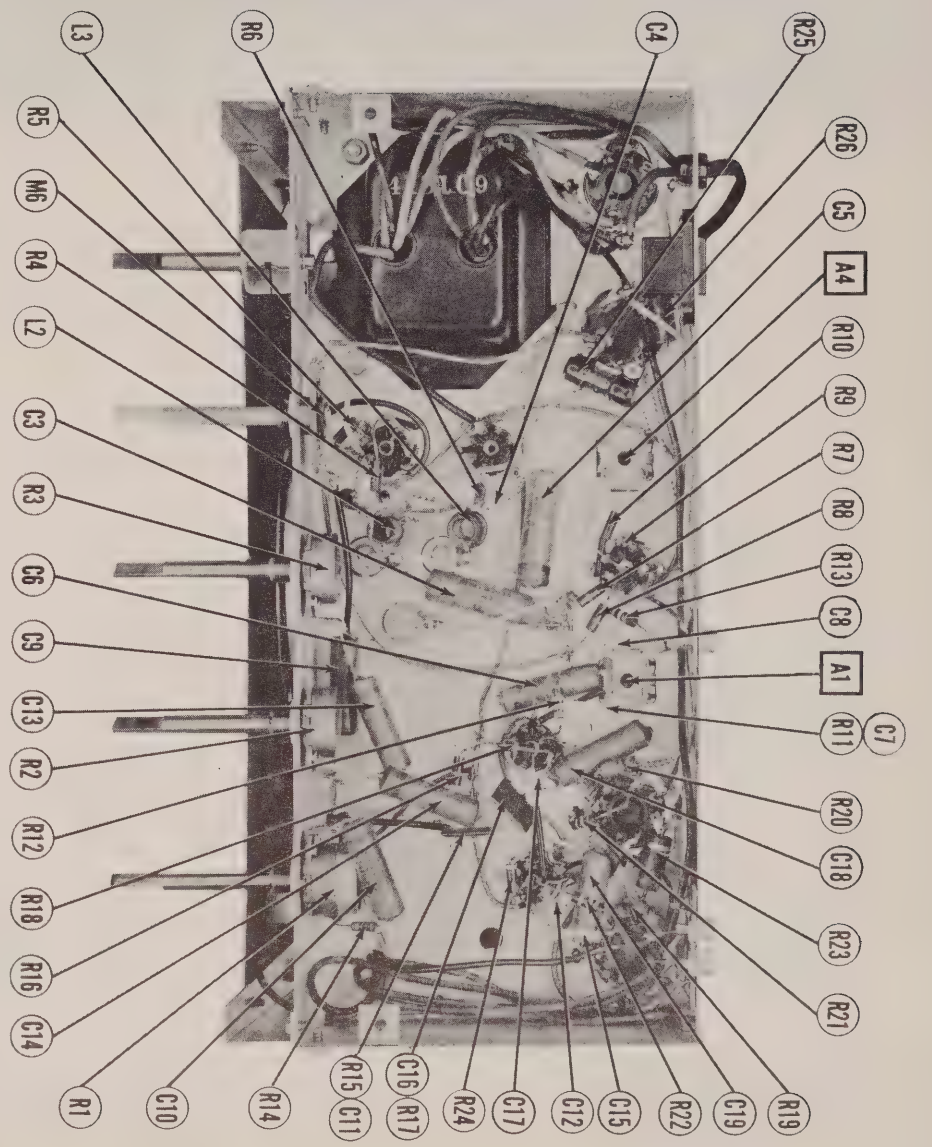
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	STROM-CARL PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.8Ω	155199	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP2	11 3/4"	1"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	STROM-CARL PART No.		
L1	Loop Ant.	3.2Ω		139051		
L2	RF Coil	.6Ω	10Ω	114405		Tap 4.5Ω
L3	Osc. Coil	7.9Ω		114096		Tap .5Ω
L4	1st. IF	15Ω	18Ω	114364		
L5	2nd. IF	18Ω	15Ω	114364		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	STROM-CARL PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		LQD-1J	"Q" Q-33			96-T	O-1 or S-1 and O-3 or S-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

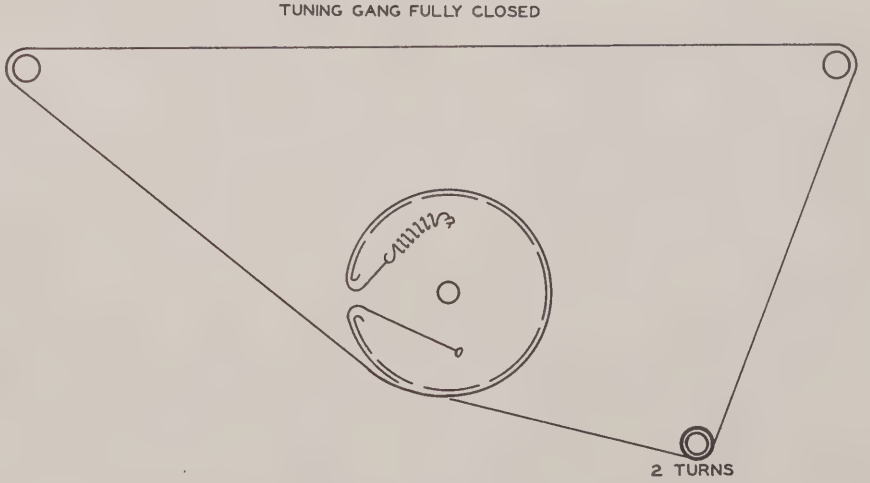
ITEM No.	REPLACEMENT DATA		REMARKS
	STROM-CARL PART No.	WALCO PART No.	
M2		W-2S or W-2A and W-2MGS or W-2MGA	

DIAL LIGHTS

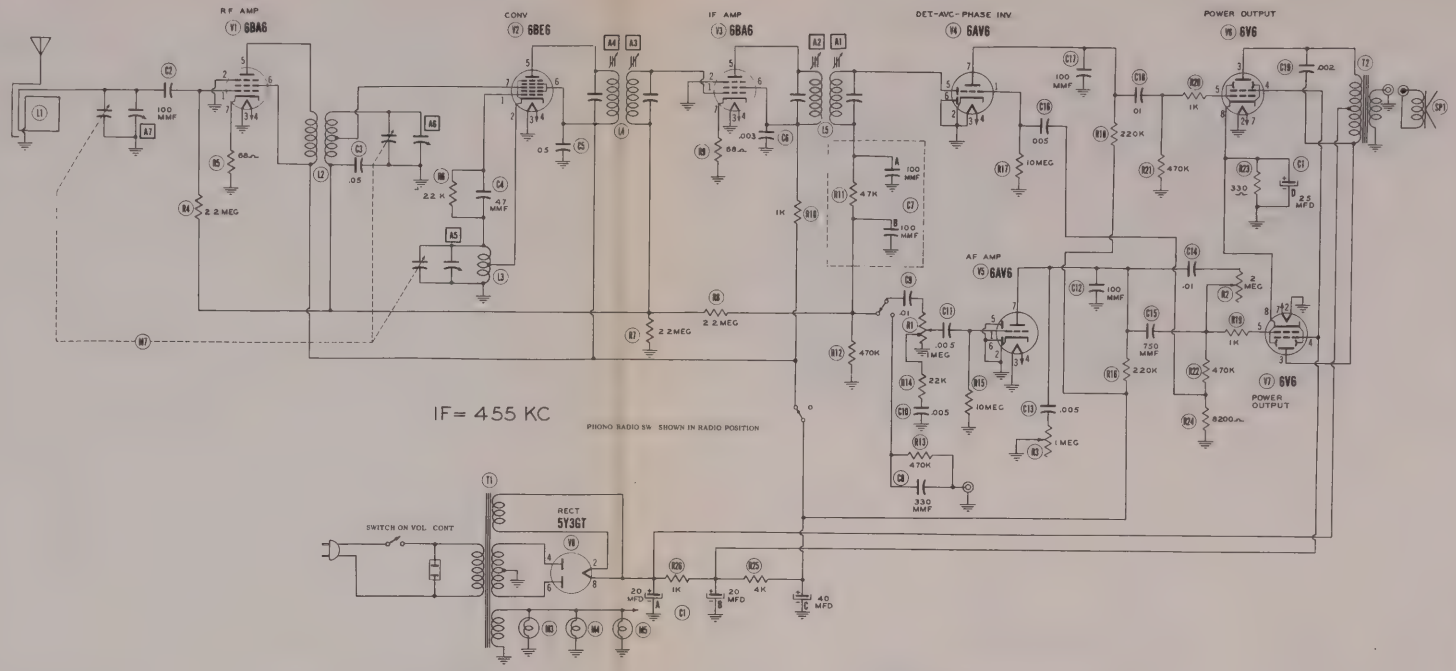
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					STROM-CARL PART No.		
M3	Bayonet	6-8	.25	Blue	29956		Type # 44
M4	Bayonet	6-8	.25	Blue	29956		Type # 44
M5	Bayonet	6-8	.25	Blue	29956		Type # 44

MISCELLANEOUS

ITEM No.	PART NAME	STROM-CARL PART No.	NOTES
M6	Swtich		Radio - Phono
M7	3 Gang Var. Cap.	110051	(29-487MMF, 18-250MMF, 18-152MMF)
	Cabinet	108216	
	Pointer Assembly	144023	



DIAL CORD DRIVE



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	- 2VDC	0V	0V	6.3 VAC	180VDC	120VDC	.6VDC	
V 2	6BE6	8-11VDC	6V	0V	6.3VAC	180VDC	120VDC	- .1VDC	
V 3	6BA6	- 1VDC	0V	0V	6.3VAC	195VDC	105VDC	.6VDC	
V 4	6AV6	- .8VDC	0V	0V	6.3VAC	5VDC	0V	65VDC	
V 5	6AV6	- .6VDC	0V	0V	6.3VAC	0V	0V	65VDC	
V 6	6V6GT	0V	0V	315VDC	270VDC	0V	0V	6.3VAC	
V 7	6V6GT	0V	0V	315VDC	270VDC	0V	0V	6.3VAC	
V 8	5Y3GT	0V	320VDC	.6VAC	320VAC	0V	320VAC	0V	320VDC

† TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.4Meg	0Ω	0Ω	1Ω	15KΩ	15KΩ	68Ω	
V 2	6BE6	33KΩ	5Ω	0Ω	1Ω	15KΩ	15KΩ	1.2Meg	
V 3	6BA6	1.2Meg	0Ω	0Ω	1Ω	76KΩ	76KΩ	68Ω	
V 4	6AV6	10Meg	0Ω	0Ω	1Ω	315KΩ	0Ω	1220KΩ	
V 5	6AV6	10Meg	0Ω	0Ω	1Ω	0Ω	0Ω	1220KΩ	
V 6	6V6GT	0Ω	0Ω	717Ω	71KΩ	470KΩ	470KΩ	1Ω	330Ω
V 7	6V6GT	0Ω	0Ω	717Ω	71KΩ	480KΩ	480KΩ	1Ω	330Ω
V 8	5Y3GT	Inf.	45KΩ	Inf.	180Ω	Inf.	180Ω	Inf.	45KΩ

† MEASURED FROM PIN 8 OF V8

ALL MEASUREMENTS TAKEN IN RADIO POSITION

THE COOPERATION OF THE MANUFACTURER OF THIS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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TRAV-LER MODELS
62R50, 63R50, 114-1A, -2, 117-3, -4, 119-5

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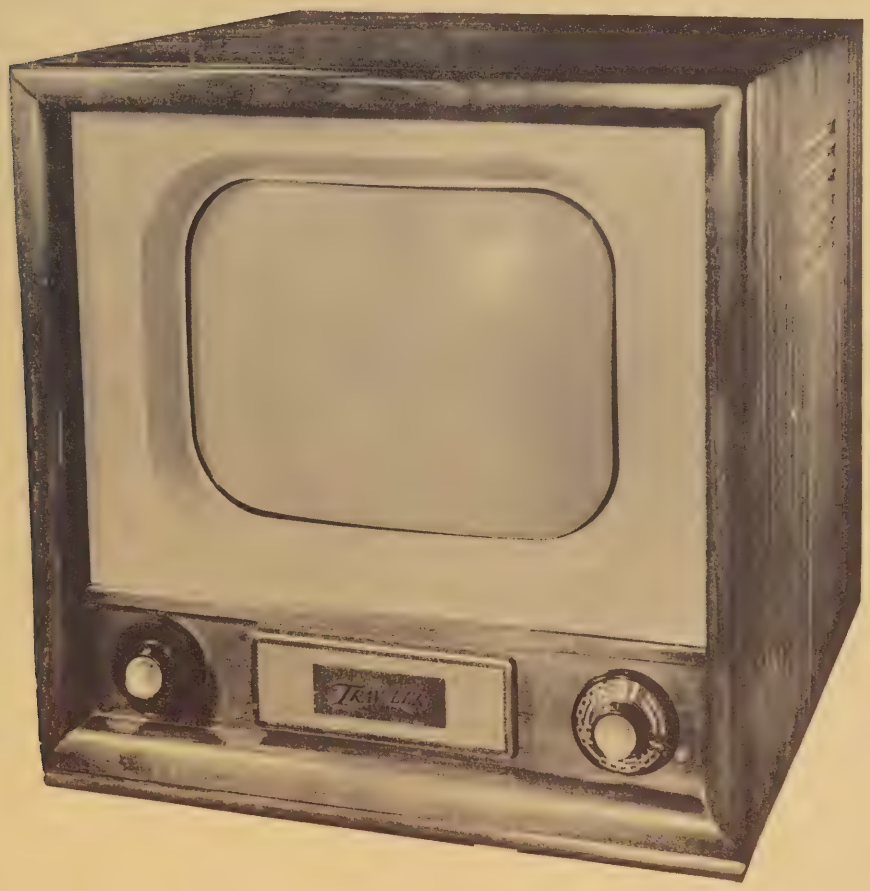

MODEL 114-1A

TRAV-LER MODELS
62R50, 63R50, 114-1A, -2, 117-3, -4, 119-5

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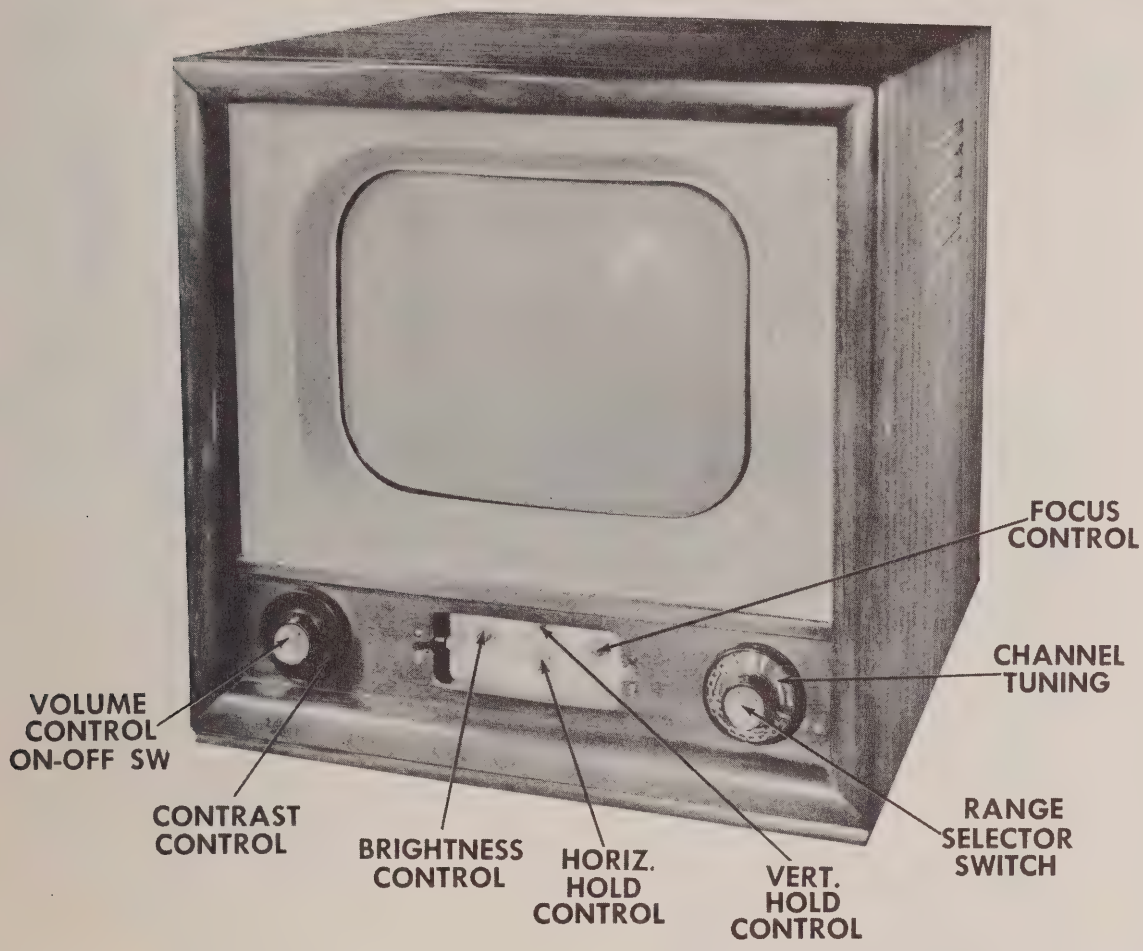
TRAV-LER MODELS
62R50, 63R50, 114-1A, -2, 117-3, -4, 119-5



TRAV-LER MODELS
62R50, 63R50, 114-1A, -2, 117-3, -4, 119-5

TRAV-LER MODEL 114-1A

TRADE NAME	Trav-ler, Models 62R50, 63R50, 114-1A, 114-2, 117-3, 117-4, 119-5 (Ch. 32A1)
MANUFACTURER	Trav-ler Radio & Tel. Corp., 571 W. Jackson, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty one
POWER SUPPLY	110-120 Volts AC 60 Cycle — RATING 1.6 Amp. at 117 Volts AC
TUNING RANGE—	CHANNELS 2 thru 13

INDEX

Alignment Instructions 6, 7
Drive Cord Stringing 7
Disassembly Instructions 11
Horizontal Sweep Circuit Adjustments 11
Parts List and Description 12, 13, 14
Photographs
Cabinet - Rear View 11
Capacitor and Alignment Identification 4, 9
Photographs (Cont.)
Chassis - Top View 3
RF Tuner 10
Resistor and Inductor Identification 15, 16
Schematic 2
Tube Placement Charts 5
Voltage and Resistance Measurements 8

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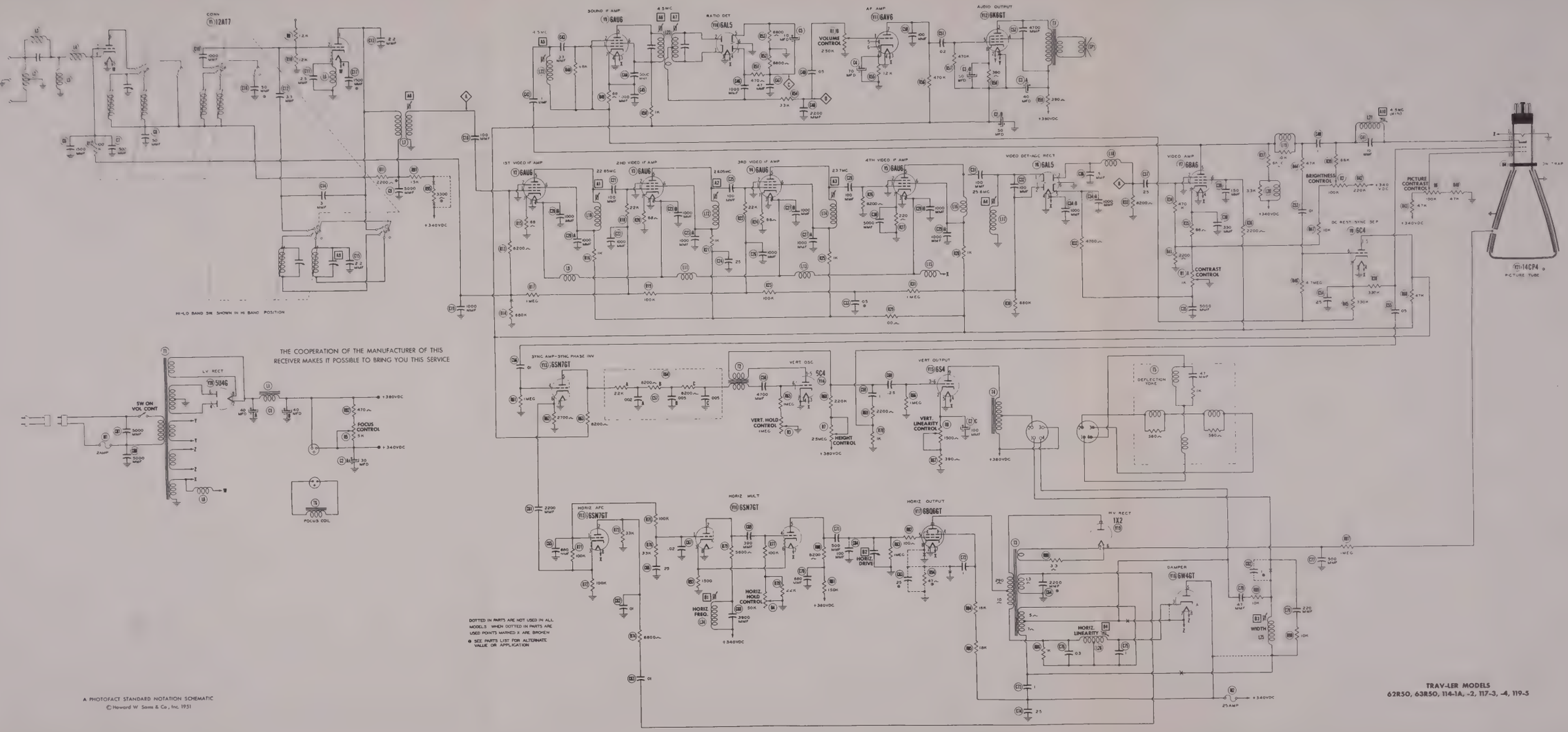
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⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
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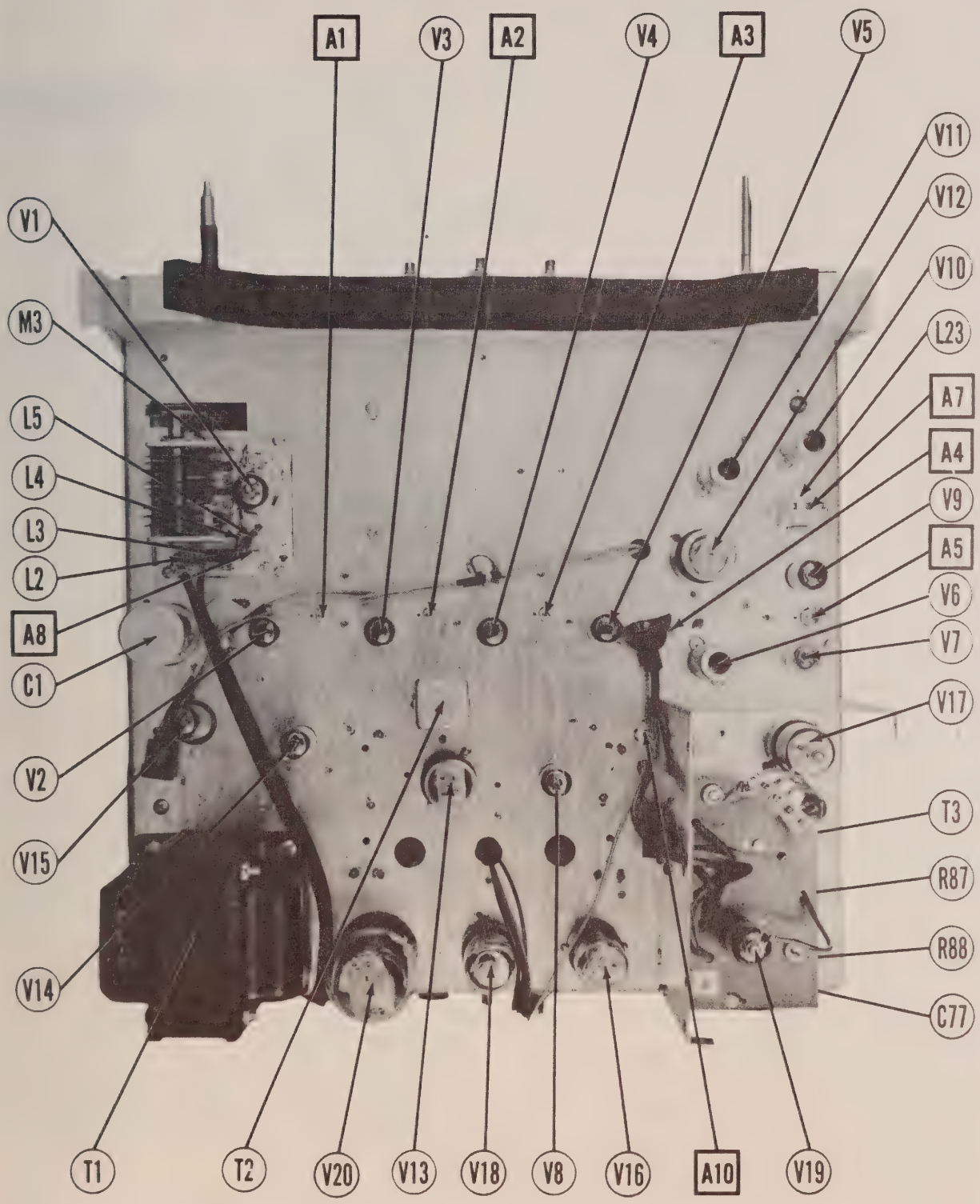
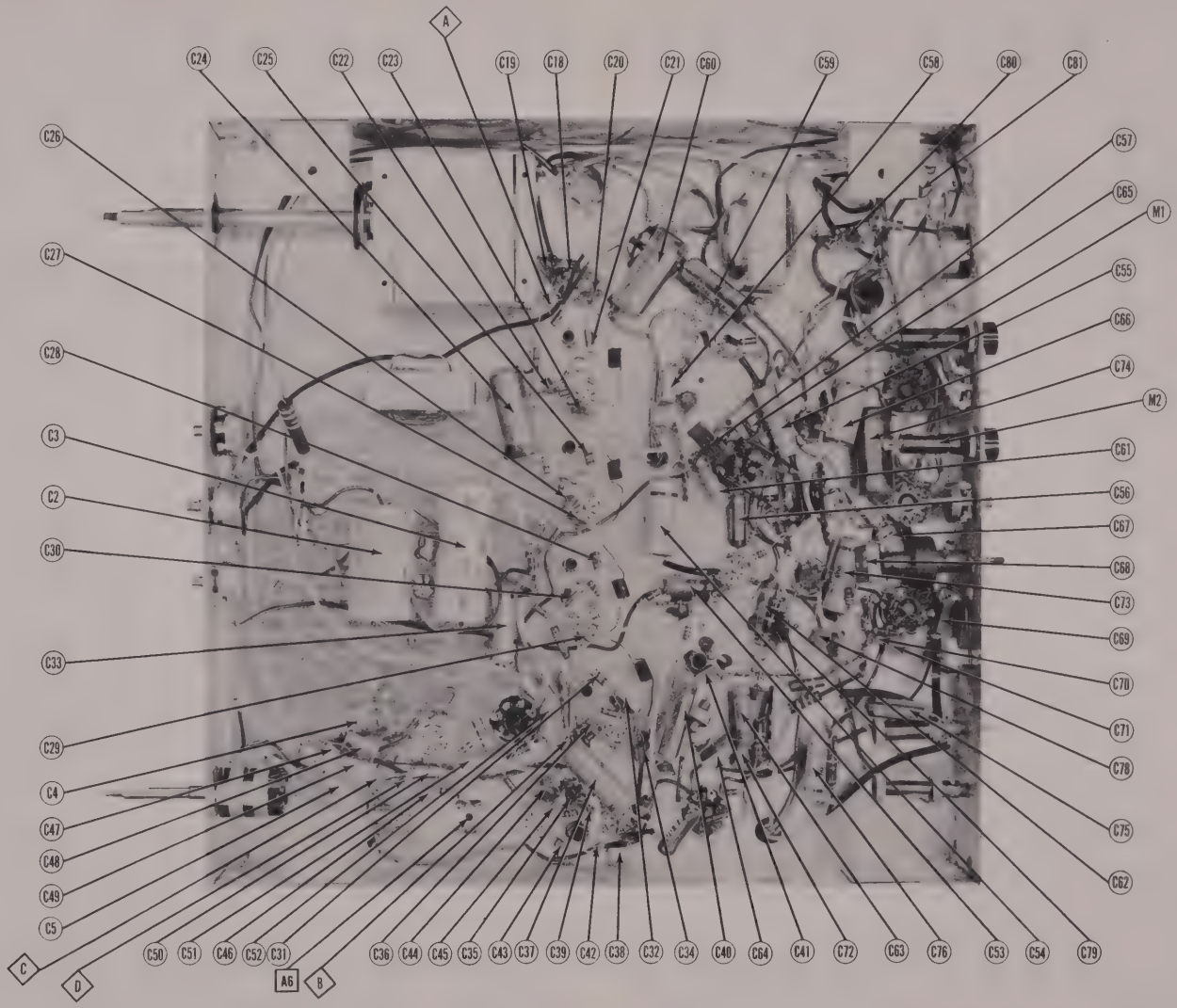
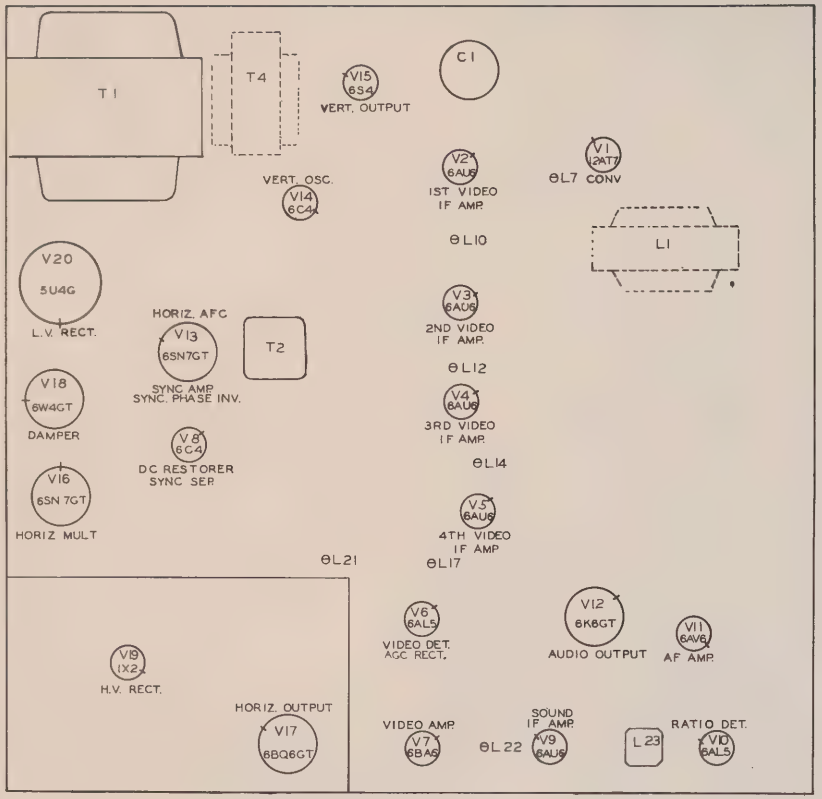
62R50, 63R50, 114-1A, -2, 117-3, -4, 119-5



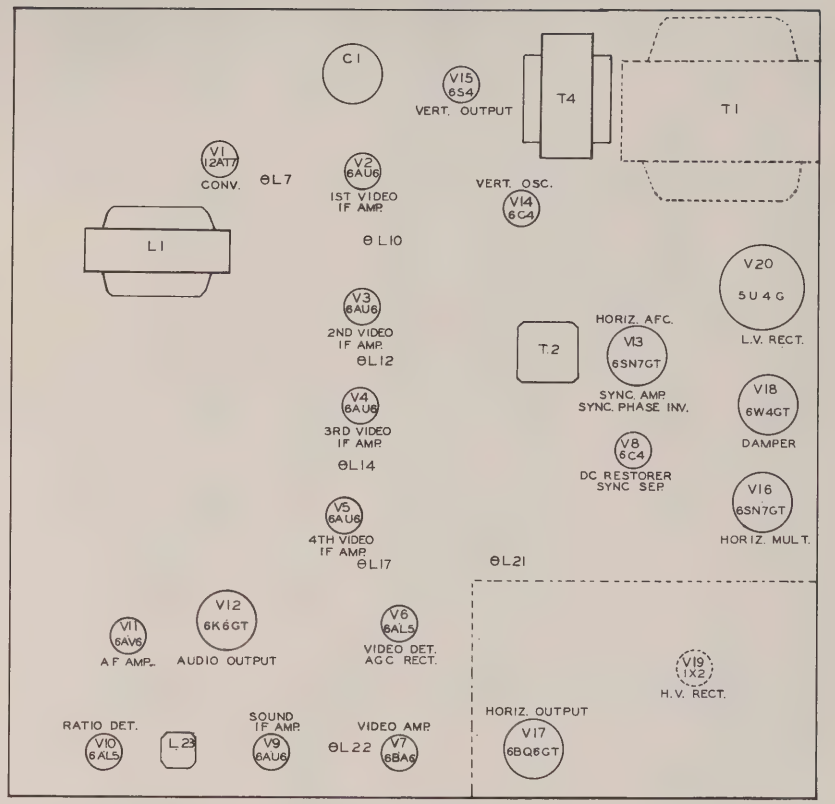
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

TRAV-LER MODELS
62R50, 63R50, 114-1A, -2, 117-3, -4, 119-5

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded lead of C33, connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to Point A. Low side to chassis.	22.65MC	10	DC probe to Point (B). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal to maintain 2 volt reading.
2.	"	"	26.05MC	"	"	A2	"
3.	"	"	23.7MC	"	"	A3	"
4.	"	"	25.6MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to Point A. Low side to chassis.	24MC (10MC SWP)	21.75MC 26.25MC	10	Vert. Amp. to Point (B). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1, (Grid) of 6BA6, (V7). Low side to chassis.	4.5MC (unmod.)	Any channel not used locally.	DC probe to Point (C). Common to chassis.	A5, A6	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point (D). Common to chassis.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD.	High side to pin 1, (Grid) of 6BA6, (V7). Low side to chassis.	4.5MC (10MC SWP)	4.5MC	Any channel not used locally.	Vertical Amp. to Point (C). Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C5. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A7	Reconnect capacitor C5. Adjust A7 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Alignment of the tuner should be limited to the secondary slug of L7, (A8), and possibly the trimmer capacitor A9.
The primary of L7 and the oscillator frequency adjustments should not be attempted in the field. Tuners known to require these extensive adjustments should be returned to the factory for replacement.
Leave the bias connected as during video IF alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

LOW BAND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6	Vert. Amp. to Point (B). Low side to chassis.	A8	Adjust for maximum amplitude and symmetry as shown in fig. 4.
9.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Adjust tuning control until response curve appears on scope with video marker at 50%. If necessary retouch A 8 for compromise which gives best response over the low band channels.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

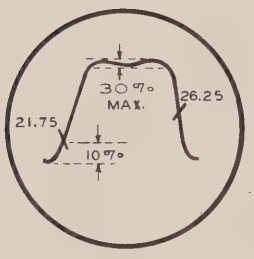


FIG. 1

FIG. 2

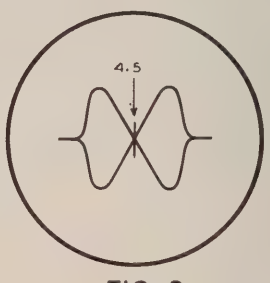


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

HIGH BAND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (B). Low side to chassis.	A9	Check response on all high band channels for response similar to fig. 4 with symmetrical peaks. If response is tilted, adjustment of A9 may effect a leveling of the peaks.
			207MC (10MC SWP)	205.25MC 209.75MC	12			
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 181.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.01MFD.	High side to pin 1, (Grid) of 6BA6, (V7). Low side to chassis.	Not used	4.5MC (400% Mod.)	Any	Vert. Amp. to Pin 11 of picture tube. Low side to chassis.	A10	Adjust for MINIMUM 400% indication on scope.
	After alignment is completed, restore set to original operation and tune in a test pattern. Retouch A10 for maximum vertical wedge of definition.							

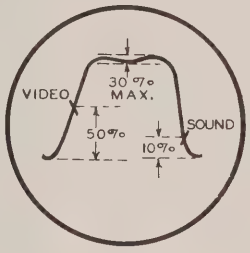
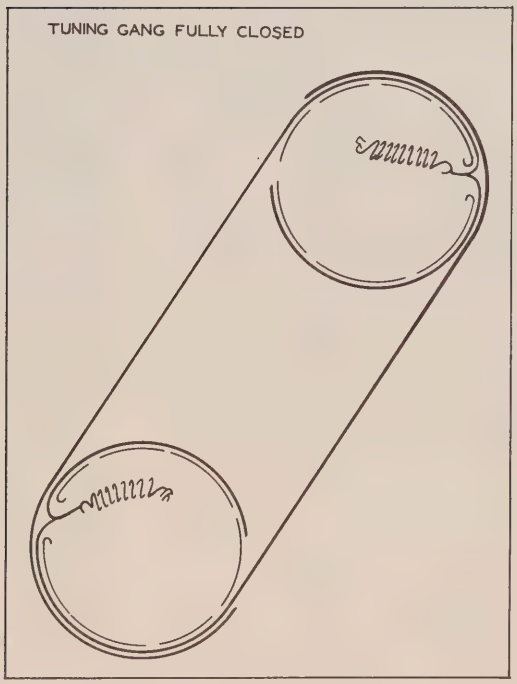


FIG. 4



FINE TUNING DRIVE CORD STRINGING

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	■130VDC	§-2.1VDC	0V	6.3VAC	6.3VAC	■115VDC	-.4VDC	0V	0V
V 2	6AU6	-.2VDC	0V	0V	6.3VAC	90VDC	90VDC	.4VDC		
V 3	6AU6	-.3VDC	0V	0V	6.3VAC	90VDC	90VDC	.4VDC		
V 4	6AU6	-.3VDC	0V	0V	6.3VAC	90VDC	90VDC	.4VDC		
V 5	6AU6	0V	0V	0V	6.3VAC	95VDC	95VDC	1.2VDC		
V 6	6AL5	0V	-.8VDC	6.3VAC	0V	.1VDC	0V	-.2VDC		
V 7	6BA6	1.1VDC	0V	0V	6.3VAC	280VDC	85VDC	7.5VDC		
V 8	6C4	95VDC	0V	0V	6.3VAC	95VDC	0V	8.2VDC		
V 9	6AU6	-.3VDC	0V	6.3VAC	0V	95VDC	95VDC	.5VDC		
V 10	6AL5	0V	0V	0V	6.3VAC	.2VDC	0V	-.2VDC		
V 11	6AV6	0V	.7VDC	6.3VAC	0V	-.6VDC	-.6VAC	55VDC		
V 12	6K6GT	0V	▲6.3VAC	¶225VDC	¶240VDC	¶-6.2VDC	100VDC	▲6.3VAC	115VDC	
V 13	6SN7GT	2.2VDC	-1.5VDC	4.2VDC	0V	85VDC	3.9VDC	0V	6.3VAC	
V 14	6C4	70VDC 225VDC	0V	6.3VAC	0V	70VDC 225VDC	§-27VDC §-39VDC	0V		
V 15	6S4	0V	15VDC 36VDC	3.4VDC	6.3VAC	0V	3.4VDC	0V	0V	220VDC
V 16	6SN7GT	§4.6VDC	285VDC	15VDC	§-13VDC §-15VDC	175VDC	15VDC	6.3VAC	0V	
V 17	6BQ6GT	-30VDC	0V	0V	125VDC	-29VDC	0V	6.3VAC	0V	Top Cap *
V 18	6W4GT	0V	0V	630VDC	0V	340VDC	0V	600VDC	600VDC	
V 19	1X2	* DO NOT MEASURE								Top Cap *
V 20	5U4G	0V	385VDC	0V	350VAC	0V	350VAC	0V	385VDC	
V 21	14CP4	0V	3.3VDC	PIN 10 75 230VDC	PIN 11 17VDC 110VDC	PIN 12 6.3VAC	H.V. CONNECTOR ** 11K.V.			

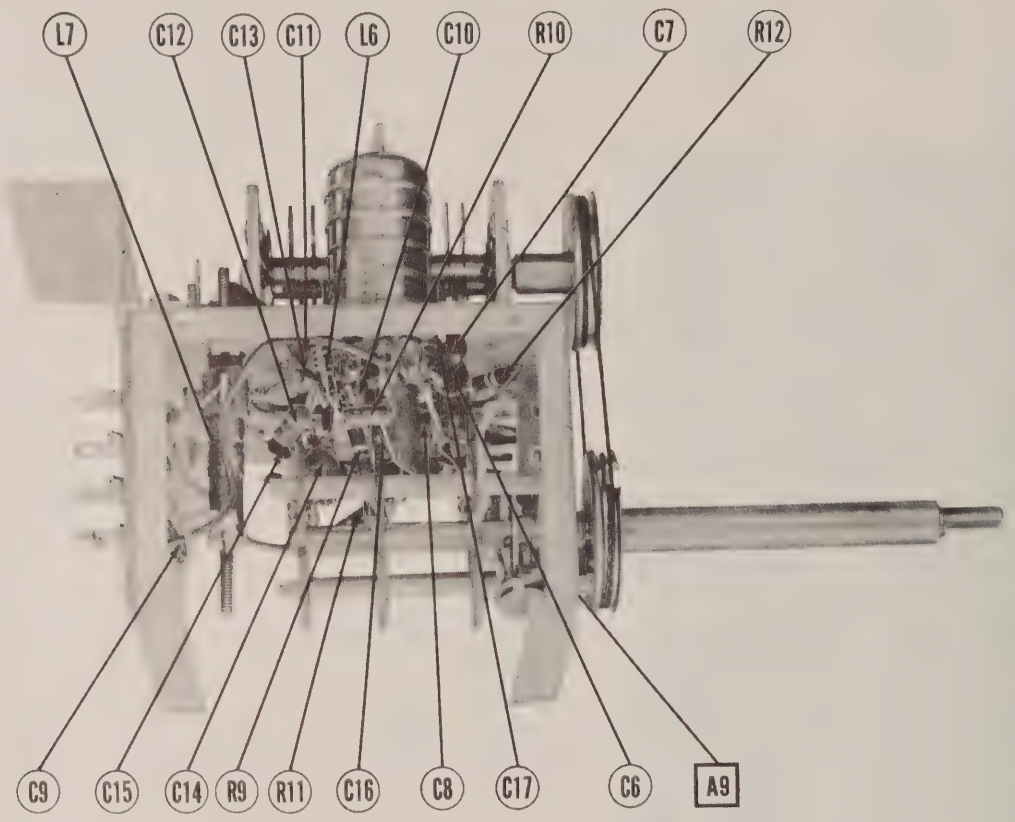
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
▲ MEASURED ACROSS FILAMENTS
¶ MEASURED FROM PIN 8 OF V12
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER
**USE EXTREME CAUTION WHEN MEASURING THIS VOLTAGE
■ VOLTAGE WILL BE ERRATIC

RESISTANCE READINGS

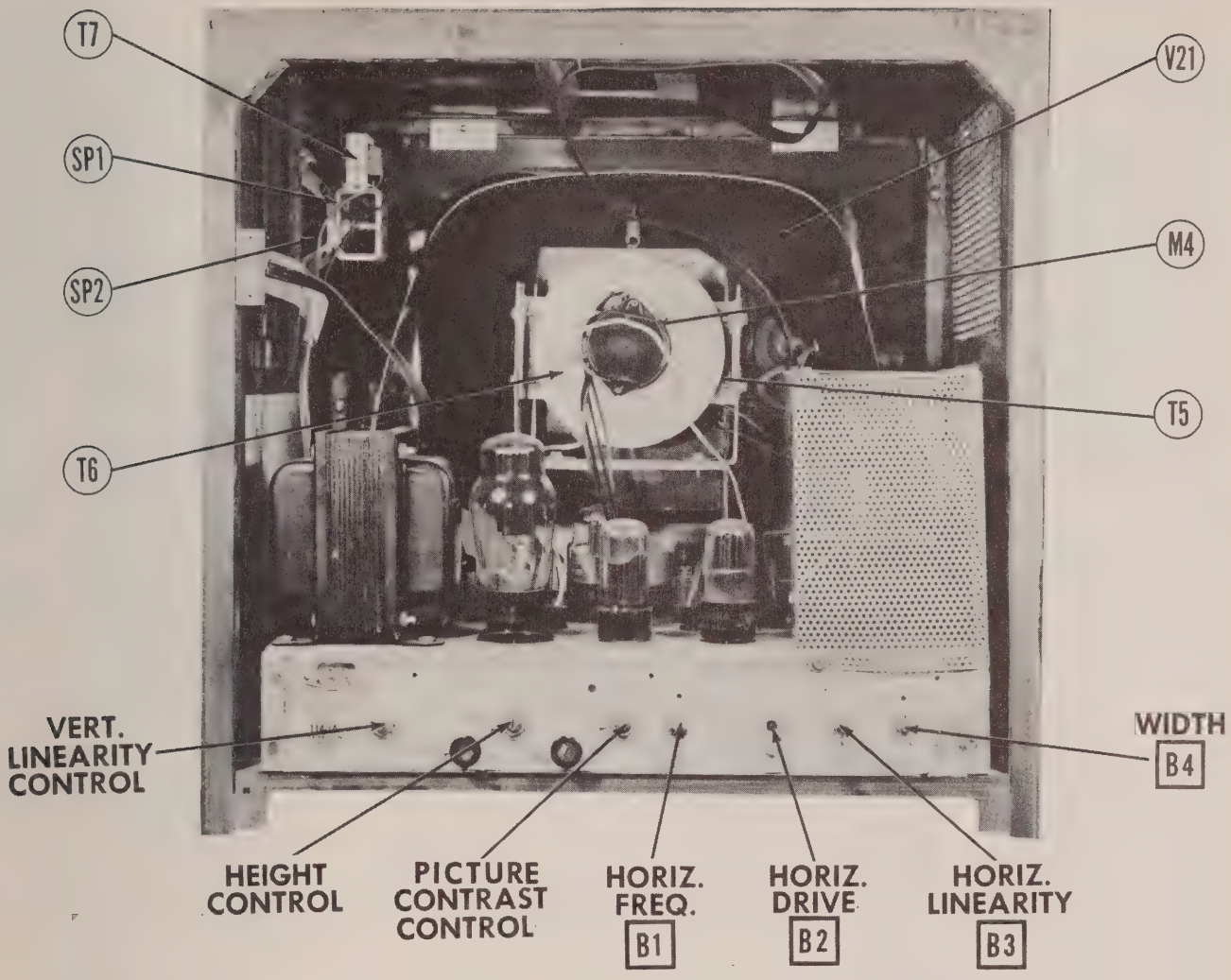
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†18KΩ	12KΩ	0Ω	.1Ω	.1Ω	†20KΩ	780KΩ	0Ω	0Ω
V 2	6AU6	680KΩ	0Ω	0Ω	.1Ω	¶1.5KΩ	¶1.5KΩ	68Ω		
V 3	6AU6	1Meg	0Ω	0Ω	.1Ω	¶1.5KΩ	¶1.5KΩ	68Ω		
V 4	6AU6	1Meg	0Ω	0Ω	.1Ω	¶1.5KΩ	¶1.5KΩ	68Ω		
V 5	6AU6	8.2KΩ	0Ω	0Ω	.1Ω	¶1.4KΩ	¶1.4KΩ	220Ω		
V 6	6AL5	.4Ω	680KΩ	.1Ω	0Ω	4.7KΩ	0Ω	8.2KΩ		
V 7	6BA6	470KΩ	0Ω	0Ω	.1Ω	†7.3KΩ	¶2.6KΩ	700Ω		
V 8	6C4	¶47KΩ	Inf.	0Ω	.1Ω	¶47KΩ	4.7Meg	330KΩ		
V 9	6AU6	68KΩ	0Ω	.1Ω	0Ω	¶1.4KΩ	¶1.4KΩ	68Ω		
V 10	6AL5	Inf.	Inf.	0Ω	.1Ω	6.8KΩ	0Ω	7.2KΩ		
V 11	6AV6	60Ω	12KΩ	.1Ω	0Ω	Inf.	Inf.	¶470KΩ		
V 12	6K6GT	Inf.	▲.4Ω	†1.1KΩ	†450Ω	¶470KΩ	¶390Ω	▲.4Ω	70KΩ	
V 13	6SN7GT	200KΩ	33KΩ	100KΩ	1Meg	¶8.6KΩ	2.7KΩ	0Ω	.1Ω	
V 14	6C4	†2.7Meg †220KΩ	Inf.	.1Ω	0Ω	†2.7Meg †220KΩ	2Meg 1Meg	0Ω		
V 15	6S4	Inf.	1.8KΩ 390Ω	1Meg	.1Ω	0Ω	1Meg	Inf.	Inf.	†1KΩ
V 16	6SN7GT	300KΩ	†6KΩ	1.5KΩ	130KΩ 100KΩ	†158KΩ	1.5KΩ	.1Ω	0Ω	
V 17	6BQ6GT	1Meg	0Ω	Inf.	†36KΩ	1Meg	Inf.	.1Ω	0Ω	Top Cap #15Ω
V 18	6W4GT	Inf.	Inf.	Inf.	Inf.	†450Ω	Inf.	#6.5Ω	#6.5Ω	
V 19	1X2	PINS 1-9 HAVE INF. RESISTANCE								Top Cap #300Ω
V 20	5U4G	Inf.	55KΩ	Inf.	54Ω	Inf.	50Ω	Inf.	55KΩ	
V 21	14CP4	0Ω	660KΩ	PIN 10 †60KΩ †47KΩ	PIN 11 †200KΩ †150KΩ	PIN 12 .1Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM PIN 8 OF V20
# MEASURED FROM PIN 3 OF V18
▲ MEASURED ACROSS FILAMENTS
¶ MEASURED FROM PIN 8 OF V12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug, (B1), until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, (B2), counter-clockwise until a bright vertical line appears in the picture, then clockwise just enough to remove the vertical line. If the vertical line cannot be obtained leave the trimmer near minimum capacity.

Adjust the horizontal width slug, (B3), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs.
2. Remove five wood screws and two 1/4" hex nead screws from rear cover. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove four 7/16" hex head bolts from chassis. Remove chassis.
7. Remove four 1/4" hex head screws from speaker. Remove speaker.

NOTE: FOR REMOVAL OF PICTURE TUBE IT IS NECESSARY TO REMOVE THE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12AT7	12AT7	9A	
V2	1st. Video IF Amp.	6AU6	6AU6	7BK	
V3	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V4	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V5	4th. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Amplifier	6BA6	6BA6	7BK	
V8	DC Restorer-Sync. Separator	6C4	6C4	6BG	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	AF Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	6K8GT	6K8GT	7B	
V13	Sync. Amplifier-Sync. Phase Inv.-Horiz. AFC	6SN7GT	6SN7GT	8BD	
V14	Vert. Oscillator	6C4	6C4	6BG	
V15	Vert. Output	6B4	6B4	6AC	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6K8G6GT	6K8G6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1X3	1X3	5T	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRAV-LER PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V21A	16CP4	16CP4	16CP4	12D	③ Space permitting
B	16KP4	16KP4	16KP4	12D	
C	16TP4	16TP4	16KP4 ③	12D	
D	16KP4	16KP4A	16KP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	TV-EC-16	AFH2-57		UPT4445		TVL-2764	▲ Filter
B	40	450							▲ Filter
C2A	30	450	TV-EC-23	PRS450/40-40		EDL5315 C10		TVL-3708	Filter
B	50	150		PRS25/100					Decoupling
C	100	50							Vert. Output Cathode
C3A	40	450	TV-EC-17	PRS450/40		BR4045A		TVA-1712	Audio Output Decoupling
B	50	50		PRS50/50		BR505		TVA-1308	Audio Output Cathode
C4	70	10	TV-EC-8	PRS25/100		BR1121		TVA-1130	AF Amp. Cathode
C5	10	50	TV-EC-20	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C6	1500			BPD-0015	DD-152		801-0015	5HK-D15	AGC Filter
C7	1500			BPD-0015	DD-152		801-0015	5HK-D15	AGC Filter
C8	50			S150	D6-500		GP1K-500		RF Amp. Dec.
C9	5000			BPD-005	DD-502		811-005	5HK-D5	RF Bypass
C10	1000			SI1000	D6-102		GP2L-102	5HK-D1	RF Coupling
C11	25			SI25NP0			NP0K-250	5TCC-Q25	Osc. Cathode
C12	3.2			SI3.3NP0	TCZ-3.3		NP0K-3R3		Osc. Grid Cap.
C13	2.2				TCZ-2.2		NP0K-2R2		Fixed Trimmer
C14	3						N750K-030		Fixed Trimmer
C15	2.2				TCZ-2.2		NP0K-2R2		Fixed Trimmer
C16	50			SI50	D6-500		GP1K-500	5GA-q5	Fixed Trimmer *
C17	1500			BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Fil. *
C18	100		TV-CC-5	SI100	D6-101	5WS71	GP1K-101	5GA-T1	IF Coupling
C19	1000		TV-CC-3	BPD-001	DD-102	1WSD1	801-001	5HK-D1	AGC Filter
C20A	1000		TV-CC-1	BPD-2X001	DD-2-102	1WSD1	812-001	5HK-2D1	1st. Video IF Dec.
B	1000					1WSD1			1st. Video IF Fil.
C21	100		TV-CC-5	SI100	D6-101	5WS71	GP1K-101	5GA-T1	IF Coupling
C22	1000		TV-CC-3	BPD-001	DD-102	1WSD1	GP2L-102	5HK-D1	AGC Filter
C23A	1000		TV-CC-1	BPD-2X001	DD-2-102	1WSD1	812-001	5HK-2D1	2nd. Video IF Dec.
B	1000					1WSD1			2nd. Video IF Fil.
C24	25	600	TV-PC-17	684-25		GP6P25		6TM-P25	RF Bypass
C25	100		TV-CC-5	SI100	D6-101	5WS71	GP1K-101	5GA-T1	IF Coupling
C26	1000		TV-CC-3	BPD-001	DD-102	1WSD1	801-001	5HK-D1	AGC Filter
C27A	1000		TV-CC-1	BPD-2X001	DD-2-102	1WSD1	812-001	5HK-2D1	3rd. Video IF Dec.
B	1000					1WSD1			3rd. Video IF Fil.
C28	100		TV-CC-5	SI100	D6-101	5WS71	GP1K-101	5GA-T1	IF Coupling
C29A	1000		TV-CC-1	BPD-2X001	DD-2-102	1WSD1	812-001	5HK-2D1	4th. Video IF Dec.
B	1000					1WSD1			4th. Video IF Fil.
C30	5000		TV-CC-3	BPD-005	DD-502	1DSD5	811-005	5HK-D5	4th. Video IF Cathode
C31	100		TV-CC-5	SI100	D6-101	5WS71	GP1K-101	5GA-T1	IF Coupling
C32	100	500	TV-CC-8	1468-0001	D6-101	5WS71	GP1K-101	1FM-31	AGC Filter
C33	.05	400	TV-PC-5	P468-05	DF-503	PTE485		4TM-85	AGC Filter †
C34A	1000		TV-CC-1	BPD-2X001	DD-2-102	1WSD1	812-001	5HK-2D1	AGC Filter
B	1000					1WSD1			Video Det. Fil.
C35	5000		TV-CC-3	BPD-005	DD-502	1DSD5	811-005	5HK-D5	AGC Decoupling
C36	4.7		TV-CC-15	SI4.7NP0	TCZ-4.7		NP0K-4R7		Video Det. Filter
C37	25	200	TV-PC-4	P468-25		GT2P25		2TM-P25	Video Coupling
C38	330	500	TV-MC-13	1468-00035	D6-331		GP2K-331	1FM-335	Video Amp. Screen
C39	150		TV-CC-23	SI150	D6-151	5WS715	GP2K-151	5GA-T15	Video Amp. Cathode
C40	1	600	TV-PC-18	P468-1	DF-104	PTE591		6TM-P1	Vert. Coupling
C41	10	500	TV-CC-21	1469-00001	TCZ-10	SR5Q1	NP0K-100	MS-41	Fixed Trimmer
C42	1		TV-CC-14	1468-00001	TCZ-1		NP0K-010		Sound IF Coupling
C43	33		TV-CC-4	S33	D6-330		GP1K-330	5GA-Q33	Sound IF Coupling
C44	5000		TV-CC-3	BPD-005	DD-502	1DSD5	811-005	5HK-D5	Sound IF Decoupling
C45	5000		TV-CC-3	BPD-005	DD-502	1DSD5	811-005	5HK-D5	Sound IF Cathode
C46	1000	500	TV-MC-16	1468-001	D6-102	1WSD1	GP2L-102	1FM-21	Diode Load Cap.
C47	47		TV-CC-13	SI47	D6-470	5WSQ5	GP1K-470	5GA-Q47	RF Bypass
C48	2200	500	TV-MC-11	1467-0025	D6-222	1WSD35	GP2-333-222		De-emphasis
C49	.05	400	TV-PC-5	P468-05	DF-503	PTE485		4TM-85	Audio Coupling
C50	100	500	TV-MC-8	1468-0001	D6-101	5WS71	GP1K-101	1FM-31	AF amp. Plate

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C51	.02	600	TV-PC-14	P688-02	DF-203	PTE582		6TM-S2	Audio Coupling
C52	4700	500	TV-MC-10	1467-005	D6-472	1DSD5	GP2-333-472	1FM-25	Audio Output Plate
C53	.01	600	TV-PC-15	P688-01	D6-103	PTE581	GP2-333-103	6TM-S1	Sync. Coupling
C54	.25	200	TV-PC-4	P688-25		GT2P25		2TM-P25	Sync. Sep. Cathode
C55	.05	400	TV-PC-5	P488-05	DF-503	PTE485		4TM-85	Vert. Sweep Coupling
C56	.01	600	TV-PC-15	P688-01	D6-103	PTE581	GP2-333-103	6TM-S1	Sync. Coupling
C57A	.003			P688-003		PTE582	GP2-333-302		Vert. Integrator Net.
B	.005		*TV-CC-26	P688-005	*PC-100	PTE585	GP2-333-502	*101C1	Vert. Integrator Net.
C	.005			P688-005		PTE585	GP2-333-502		Vert. Integrator Net.
R58	.0047	500	TV-MC-10	1467-005	D6-472	1DSD5	GP2-333-472	1FM-25	Horiz. Osc. Grid
C59	.1	600	TV-PC-16	P688-1	DF-104	PTE591		6TM-P1	Vert. Discharge
C60	.25	600	TV-PC-17	684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C61	.1200	500	TV-MC-15	1467-0025	D6-222	1WSD25	GP2-333-222		Horiz. Sync. Coupling
C62	.01	600	TV-PC-15	P688-01	D6-103	PTE581	GP2-333-103	6TM-S1	Integrator Net.
C63	.01	600	TV-PC-15	P688-01	D6-103	PTE581	GP2-333-103	6TM-S1	Horiz. Feedback
C64	.2200	500	TV-MC-11	1467-0025	D6-222	1WSD25	GP2-333-222		Integrator Net.*
C65	680	500	TV-MC-15	1479-0007	D6-681	1W5T7	GP2K-681	1FM-27	AFC Filter
C66	.25	200	TV-PC-4	P488-25		GT2P25		2TM-P25	AFC Filter
C67	.03	600	TV-PC-14	P688-02	DF-203	PTE582		6TM-S2	Horiz. MV Grid
C68	3900	500	TV-MC-12	1464-004		1DR5D4			Fixed Trimmer
C69	390	500	TV-MC-14	1469-0004		5R5T4		MS-34	Horiz. MV Feedback
C70	680	500	TV-MC-15	1479-0007		2RET7		MS-37	Horiz. Discharge
C71	500	500	TV-MC-17	1468-0005	D6-501	5W5T5	GP3K-501	1FM-35	Horiz. Sweep Coupling
C72	.1	600	TV-PC-16	P688-1	DF-104	PTE591		6TM-P1	Horiz. Output Screen
C73	.1	600	TV-PC-16	P688-1	DF-104	PTE591		6TM-P1	Horiz. Sweep Coupling
C74	.25	800	TV-PC-17	684-25		GP6P25		6TM-P25	Damper Plate
C75	.1	300	TV-PC-3	P388-1	DF-104	PTE4P1		2TM-P1	Damper Filter
C76	.03	400	TV-PC-18	P488-03		PTE583		8TM-S3	Damper Filter
C77	500	15000	TV-CC-22	HV30-C	TV3-502			510C1	HV Filter
C78	47	1500	TV-CC-27						Fixed Trimmer
C79	220	500	TV-MC-3	1468-00025	D6-221				Fixed Trimmer
C80	5000		TV-CC-3	BPD-005	DD-502	1DSD5	811-005	5HK-D5	Line Filter
C81	5000		TV-CC-3	BPD-005	DD-502	1DSD5	811-005	5HK-D5	Line Filter
C82	.1	600	TV-PC-16	P688-1	DF-104	PTE591		6TM-P1	Horiz. Sweep Coupling *
C83	.25	200	TV-PC-4	P488-25		GT2P25		2TM-P25	Horiz. Output Cathode *
C84	.100		TV-MC-2	S1100	D6-101	5WS71	GP1K-101	5GA-T1	Voltage Divider *

* Not used in all models.
▲ Items C57A, C57B, C57C, R64A, R64B, R64C are combined in one unit.
† Some models use .02MFD. in this application.(Part # TV-PC-14)
† Some models use 390MMF. in this application. (Part # TV-MC-14)
¶ Some models use 470MMF. in this application. (Part # TV-MC-17)
†† Some models use .25MFD. in this application. (Part # TV-PC-17)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1000Ω	2	TV-VC36		RTV-292		Contrast Control - Wire Wound
B	250KΩ	½					Volume Control and Switch
R2A	100KΩ	½	TV-VC32	Q11-128	AG-49-3	AN-40	Brightness Control
B	Shaft		Not req.	Not req.	FK3-1/4	AK-1	Attach to R2A per instructions
R3A	1Meg	½	TV-VC30	Q11-137	AM-61-8	AN-59	Vertical Hold Control
B	Shaft		Not req.	Not req.	FK3-1/4	AK-1	Attach to R3A per instructions
R4A	50KΩ	½	TV-VC-31	Q11-123	AG-44-5	AN-31	Horiz. Hold Control
B	Shaft		Not req.	Not req.	FK3-1/4	AK-1	Attach to R4A per instructions
R5	5000Ω	2	TV-VC29	W-5000	43-5000	VK-135	Focus Control - Wire Wound
R6A	100KΩ	½	TV-VC-32	Q11-128	AG-49-3	AN-40	Picture Contrast Control
B	Shaft		Not req.	Not req.	FK3-1/4	AK-1	Attach to R6A per instructions
R7A	2.5Meg	½	TV-VC28	Q11-239	AG-84-8	AN-83	Height Control
B	Shaft		Not req.	Not req.	FK3-1/4	AK-1	Attach to R7A per instructions
R8	1500Ω	2	TV-VC35	WK-1500	43-1500	VK-130	Vertical Linearity - Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R9	12KΩ	½		BTS-12K	Series Test Point
R10	12KΩ	½		BTS-12K	Osc. Grid
R11	2200Ω	½		BTS-2200	RF Amp. Plate - See Note 1
R12	100KΩ	½	TV-IR-43	BTS-100K	AGC Network
R13	8200Ω	½	TV-IR-60	BTS-8200	1st. Video IF Amp. Grid
R14	680KΩ	20%	TV-IR-26	BTS-680K	AGC Network
R15	68Ω	½	TV-IR-59		1st. Video IF Amp. Cathode
R16	1000Ω	20%	TV-IR-24	BTS-1000Ω	1st. Video IF Amp. Decoupling
R17	1Meg	20%	TV-IR-12	BTS-1Meg	AGC Network
R18	22KΩ	½	TV-IR-25	BTS-22K	2nd. Video IF Amp. Grid
R19	100KΩ	½	TV-IR-43	BTS-100K	AGC Network
R20	68Ω	½	TV-IR-59		2nd. Video IF Amp. Cathode
R21	1000Ω	20%	TV-IR-24	BTS-1000	2nd. Video IF Amp. Decoupling
R22	22KΩ	½	TV-IR-25	BTS-22K	3rd. Video IF Amp. Grid
R23	100KΩ	½	TV-IR-43	BTS-100K	AGC Network
R24	68Ω	½	TV-IR-59		3rd. Video IF Amp. Cathode
R25	1000Ω	20%	TV-IR-24	BTS-1000	3rd. Video IF Amp. Decoupling
R26	8200Ω	½	TV-IR-60		4th. Video IF Amp. Grid
R27	220Ω	½	TV-IR-5	BTS-220	4th. Video IF Amp. Cathode
R28	1000Ω	20%	TV-IR-24	BTS-1000	4th. Video IF Amp. Decoupling
R29	100Ω	20%	TV-IR-36	BTS-100	Decoupling
R30	680KΩ	20%	TV-IR-26	BTS-680K	AGC Diode Load
R31	1MegΩ	20%	TV-IR-13	BTS-1Meg	AGC Network
R32	4700Ω	½	TV-IR-48	BTS-4700	AGC Network
R33	8200Ω	½	TV-IR-60	BTS-8200	Video Detector Diode Load
R34	470KΩ	20%	TV-IR-11	BTS-470K	Video Amp. Grid
R35	68Ω	½	TV-IR-59		Video Amp. Cathode
R36	2200Ω	½	TV-IR-67	BTS-2200	Video Amp. Screen
R37	6800Ω	½	TV-WR-8		Video Amp. Plate - Wire Wound
R38	330KΩ	½	TV-IR-51	BTS-330K	Picture Tube Grid
R39	68KΩ	½	TV-IR-61	BTS-68K	Picture Tube Cathode
R40	47KΩ	½	TV-IR-10	BTS-47K	Acc. Anode Load
R41	2200Ω	½	TV-IR-67	BTS-2200	Voltage Divider
R42	220KΩ	½	TV-IR-91	BTS-220K	Voltage Divider
R43	47KΩ	½	TV-IR-10	BTS-47K	Voltage Divider
R44	47KΩ	½	TV-IR-10	BTS-47K	Isolation

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	IDENTIFICATION CODES
R45	320KΩ	½	TV IR-51	BTS-330K	Sync. Separator Cathode
R46	4.7Meg	½	TV-IR-44	BTS-4.7Meg	Sync. Separator Grid
R47	10KΩ	½	TV-IR-54	BTS-10K	Voltage Divider
R48	68KΩ	½	TV-IR-61		Sound IF Amp. Grid
R49	68Ω	½	TV-IR-54		Sound IF Amp. Cathode
R50	1000Ω	20%	TV-IR-24	BTS-1000	Sound IF Amp. Decoupling
R51	470Ω	½	TV-IR-8	BTS-470	Balancing
R52	6800Ω	½	TV-IR-78	BTS-6800	Ratio Detector Diode Load
R53	6800Ω	½	TV-IR-78	BTS-6800	Ratio Detector Diode Load
R54	33KΩ	½	TV-IR-58	BTS-33K	De-emphasis
R55	12KΩ	½	TV-IR-88	BTS-12K	AF Amp. Cathode
R56	470KΩ	20%	TV-IR-11	BTS-470K	AF Amp. Plate
R57	470KΩ	20%	TV-IR-11	BTS-470K	Output Grid
R58	390Ω	½	TV-IR-55	BTA-390	Output Cathode
R59	390Ω	½	TV-IR-55	BTA-390	Output Decoupling
R60	47KΩ	½	TV-IR-30	BTS-47K	Sync. Separator Plate
R61	1Meg	30%	TV-IR-12	BTS-1Meg	Sync. Amp. Grid
R62	2700Ω	½	TV-IR-79	BTS-2700	Sync. Amp. Cathode
R63	8200Ω	½	TV-IR-60	BTS-8200	Sync. Amp. Plate
R64A	22KΩ	½		BTS-22K	Integrator
B	8200Ω	½	*TV-CC-26	BTS-8200	Integrator
C	8200Ω	½		BTS-8200	Integrator
R64	1Meg	20%	TV-IR-12	BTS-1Meg	Vertical Osc. Grid
R66	1Meg	20%	TV-IR-12	BTS-1Meg	Vertical Output Grids
R67	390Ω	½	TV-IR-55	BTA-390	Vertical Output Cathode
R68	220KΩ	½	TV-IR-91	BTS-220K	Decoupling
R69	2300Ω	½	TV-IR-67	BTS-2200	Vertical Retrace Blanking
R70	1000Ω	20%	TV-IR-24	BTS-1000	Vertical Retrace Blanking
R71	100KΩ	½	TV-IR-43	BTS-100K	Horiz. AFC Grid
R72	100KΩ	½	TV-IR-43	BTS-100K	Horiz. AFC Cathode
R73	33KΩ	½	TV-IR-58	BTS-33K	Voltage Divider
R74	6800Ω	½	TV-IR-78	BTS-6800	Horiz. Feedback
R75	100KΩ	½	TV-IR-43	BTS-100K	Horiz. AFC Filter
R76	33KΩ	½	TV-IR-78	BTS-33K	Horiz. AFC Filter
R77	100KΩ	½	TV-IR-43	BTS-100K	Horiz. MV Grid
R78	22KΩ	½	TV-IR-45	BTS-22K	Horiz. MV Grid
R79	5600Ω	½	TV-IR-53	BTS-5600	Horiz. MV Plate
R80	8200Ω	½	TV-IR-60	BTS-8200	Horiz. MV Plate
R81	150KΩ	½	TV-IR-95	BTS-150K	Horiz. MV Plate
R82	100Ω	20%	TV-IR-36		Parasitic Suppressor
R83	1Meg	20%	TV-IR-12	BTS-1Meg	Horiz. Output Grid
R84	18KΩ	½	TV-IR-85	BTA-18K	Horiz. Output Screen
R85	18KΩ	½	TV-IR-85	BTA-18K	Horiz. Output Screen
R86	1000Ω	½	TV-IR-42	BTA-1000	Horiz. Linearity Coil Shunt
R87	1Meg	20%	TV-IR-66	BTA-1Meg	H.V. Filter
R88	3.3Ω	½	TV-IR-85		H.V. Filament
R89	10KΩ	½	TV-IR-64	BTS-10K	Damping
R90	10KΩ	1	TV-IR-84	BTA-10K	Damping
R91	15KΩ	5	TV-WR-12	1 3/4A-15K	Decoupling
R92	470Ω	2	TV-IR-90	BTB-470	Focus Coil Shunt
R93	1500Ω	½	TV-IR-29	BTS-1500	Horiz. MV Cathode
R94	47Ω	½	TV-IR-41		Horiz. Output Cathode - See Note 2
R95	3300Ω	1		BTA-3300	Decoupling -See Note 2

▲ Items R64A, R64B, R64C, C57A, C57B, C57C are combined in one unit.
Note 1 Some models use a 1800Ω resistor in this application.
Note 2 Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRAV-LER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⑤ 1.6A	780VCT .160ADC	5VAC ⑤ 3A	6.3VAC ② 4A SEC. 4 6.3VAC ③ 1.2A SEC. 5 6.3VAC ⑤ 6A	TV-TR-9	P-6135 and P6134	P-3174 ①	

① Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRAV-LER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	1.1KΩ	TV-TR-3	A-8122	A-4000 ②	TBO-2	Vert. Block Osc. Trans.
T3	2000Ω Tap 10Ω	12Ω Tap 7Ω SEC. 2 1.3Ω SEC. 3 0Ω	TV-X-109		RVO-1 and MWC-1		Horiz. Output Trans.
T4	1030Ω Tap 13Ω		TV-TR-8	A-8123	A-3037	TBO-5 ③	Vert. Output Trans.
T5A	19Ω		TV-L-35	DY-7	MDF-70		Horiz. Deflection Coils
B	41Ω						Vert. Deflection Coils
T6	460Ω		TV-L-28				Focus Coil

③ Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRAV-LER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	8.2KΩ	3.3Ω	650Ω	.7Ω		A-3823 ②	A-3020	RO-16 ②	② Drill one new mounting hole.

TRAV-LER MODELS 62R50, 63R50, 114-1A, -2, 117-3, -4, 119-5

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	TRAV-LER PART No.	VIKING PART No.	QUAM PART No.	
SP1	PM	3.3Ω	TV-SPK-18	46J6	46A1	
	CONE DIA.	V. C. DIA.				
SP2	4"X6"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	TRAV-LER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.180A	58Ω	2 Henries	TV-FC-1	C-2325	C-2974	TR-3300②	② Drill one new mounting hole.

COILS (RF-IF)

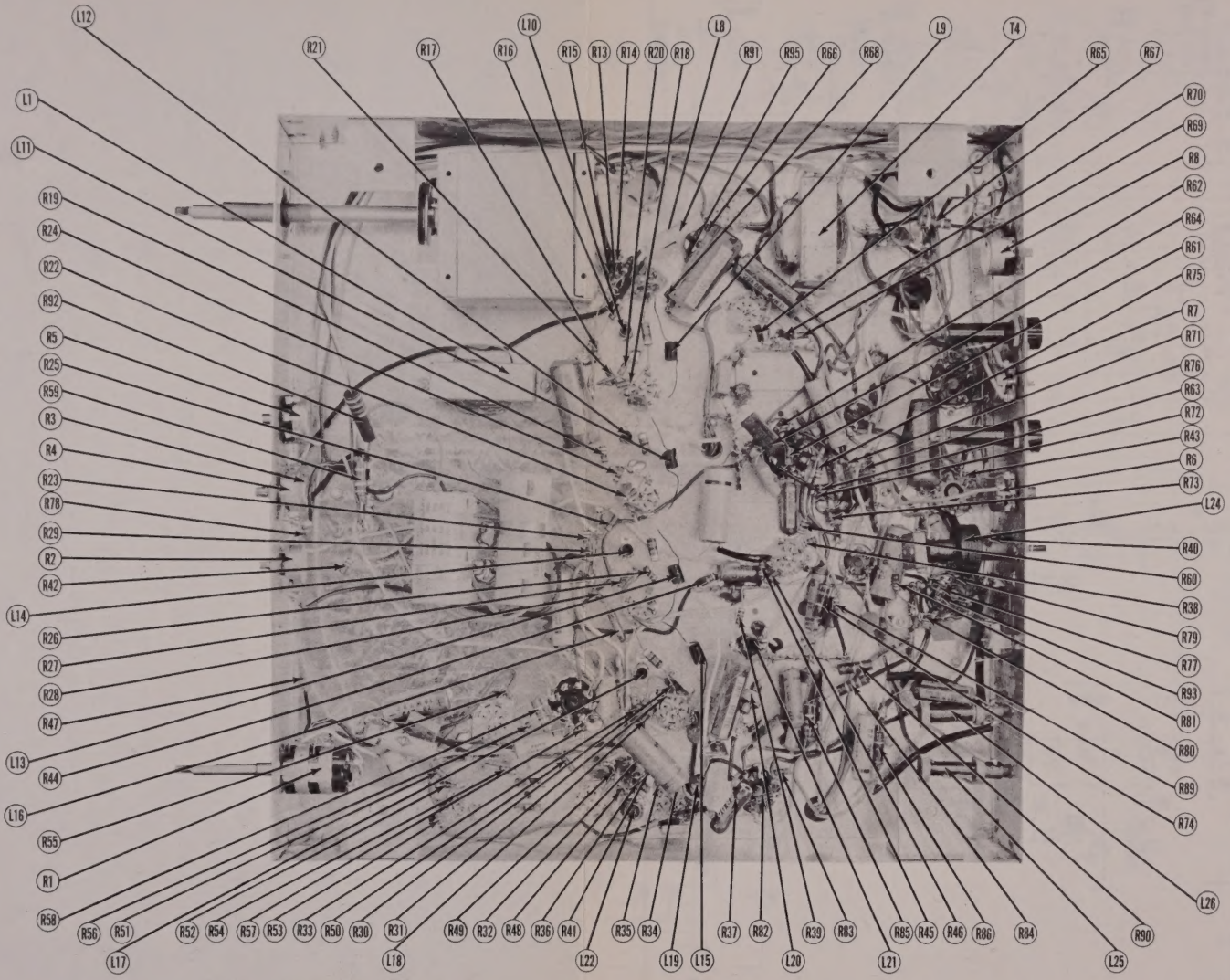
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRAV-LER PART No.		
L2	Ant. Coil	0Ω	0Ω			
L3	IF, Trap	0Ω				Wound on 25MMF. Cap
L4	Ant. Coil	0Ω				
L5	Ant. Coil Shunt	0Ω				
L6	Cathode Choke	0Ω				
L7	lst. Video IF	.1Ω	.4Ω			
L8	Fil. Choke	0Ω				
L9	Fil. Choke	0Ω				
L10	2nd. Video IF	.4Ω		TV-L-13		
L11	Fil. Choke	0Ω				
L12	3rd. Video IF	.4Ω		TV-L-13		
L13	Fil. Choke	0Ω				
L14	4th. Video IF	.4Ω		TV-L-13		
L15	Fil. Choke	0Ω				
L16	RF Choke	2.8Ω		TV-L-20		
L17	5th. Video IF	.4Ω		TV-L-13		
L18	Peaking	3.5Ω		TV-L-14		
L19	Peaking	5.5Ω		TV-L-31		Wound on 10KΩ resistor
L20	Peaking	12Ω		TV-L-32		Wound on 3.3KΩ resistor
L21	4.5MC Trap	1.6Ω		TV-L-16		
L22	Sound IF	1.6Ω		TV-L-16		
L23	Ratio Det. Trans.	4Ω	2Ω	TV-L-17		Tap 1.8Ω
L24	Horiz. Osc.	70Ω		TV-L-18		
L25	Horiz. Width	6Ω		TV-L-33		
L26	Horiz. Lin.	5Ω		TV-L-29		Tap 1.2Ω

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			TRAV-LER PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Slo Blo	2A	TV-F-4	TV-F-2	31300.2	341002	
M2	3AG	.250A	TV-F-1S	TV-F-2	312.250	341002	

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M3	RF Tuner	TV-TA-4	Models 62R50 and 63R50
M4	Ion Trap		
B2	Trimmer	TV-TC-11	Horiz. Drive
	Knob	TV-K-106	Volume
	Knob	TV-L-107	Contrast
	Knob	TV-L-105	Band Selector
	Knob	TV-K-103	Channel



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